POTTSCO
Light-Weight Aggregate

Light-Weight
Low Cost
High Insulation Values
High Acoustical Values
Load-Bearing
Fire Resistant
Nailable
Plaster and Stucco Base
Easy Workability

USE IT FOR

Structural Concrete
Fireproofing
Load-Bearing Building Units
Bridge Decks
Nailing Concrete
Precast Structural Slabs
Precast Roof Slabs
Partition Units
Floor-fill
Roof-fill

and wherever else dead load saving is advantageous

Exclusively Produced by

THE POTTSCO CORPORATION

Quality and Economy

H. H. POTTS
PRESIDENT

PHONE STATE 1340

POTTSCO
Light-Weight Aggregate

Load Bearing

Low Cost

High Insulation Value

High Acoustical Value

Used in some of the largest and most modern Government Buildings

The Pottsco Corporation

One North La Salle Street
Chicago

Light Weight

Fire Resistant

Uniform and Easily Worked

Direct Plaster & Stucco Base

THE BUILDING AND CONSTRUCTION INDUSTRY:

This catalog has been compiled and issued in the hope that the wide variety of data herein contained will serve to acquaint the reader with the salient qualities and advantages of POTTSCO light-weight concrete.

No attempt has been made to provide accurate specifications for specific work. Rather, this catalog serves as a general treatment of the product and its uses. However, this company will, through its general and district offices, provide detailed specifications for any project.

We believe POTTSCO presents a product of QUALITY and ECONOMY to the building and construction industry -- a combination that will be happily received by purchasers and users of light-weight concrete.

An earnest effort will be made by all representatives of this corporation to serve the industry to the best of their ability.

Respectfully,

President.

The following offices are established under direct and competent supervision to quote prices, handle orders and generally service the sale and use of POTTSCO.

Write the nearest office.

General Office

Chicago, Illinois - One North LaSalle Street

Telephone - State 1340. President, H. H. Potts.

New York City

1440 Broadway - Telephone - Lackawanna 4-2714.

A. R. McMullin, New York Manager.

Washington,D.C.

510 Metropolitan Bank Building - Telephone - National 933

L. K. McDorman, District Manager.

Newark, N. J.

60 Park Place - Telephone - Market 2-4917

J. Franklin, District Manager

Plants are located at - Chicago, Illinois - Pittsburgh, Pennsylvania - Bethlehem, Pennsylvania.

Are You Interested in Saving Money on Your Light-weight Concrete

SOME REASONS FOR USING POTTSCO

1. It is economical - the aggregate is low in cost offering contractor substantial savings.

2. Use it for:

   Floor-fill
   Roof Slabs
   Nailing Concrete
   Fireproofing
   Back-up Tile
   Partition Tile

3. It places perfectly and rapidly - still further reducing cost to contractor for concrete in place.

4. POTTSCO floor-fill and similar concrete weighs from 70 to 75 pounds per cubic foot. Wall load-bearing POTTSCO concrete weighs approximately 100 pounds per cubic foot.

5. It meets Federal, State and City building codes and requirements.

6. POTTSCO aggregate is entirely free from any elements which react unfavorably to steel, iron or metal - no possible corrosion.

7. POTTSCO concrete is fire-proof.

8. POTTSCO concrete has superior insulation and acoustical properties.

9. High strength with minimum amount of cement is developed.

10. POTTSCO aggregate can be handled equally well through Ready-Mix or Transit-Mix plants.

11. Only one grade of aggregate to handle - no segregation - ready to use as unloaded from car.

12. POTTSCO concrete has been used in large government and commercial projects.

13. Producing plants, in conjunction with low freight rates, have been established so that POTTSCO may be used on any job in a very wide territorial area with BIG savings.

14. Summed up POTTSCO aggregate produces a perfect cellular, porous, light-weight concrete at an attractive cost.

THE POTTSCO CORPORATION
One North LaSalle Street,
Chicago

MATERIAL

TREASURY DEPARTMENT

WASHINGTON

OFFICE OF SUPERVISING ARCHITECT

IN REPLYING QUOTE THE ABOVE SUBJECT, BUILDING, AND THESE LETTERS SA-AE

July 1, 1933.

The Pottsco Corporation,
1 North LaSalle Street,
Chicago, Ill.

Gentlemen:

Referring to your letter of June 12th, the specifications in use by this office for light weight concrete fill in connection with the construction of buildings under the supervision of this office have been modified to permit the use of material of the type manufactured by your company.

Respectfully,

Jas. A. Wetmore

RAG

Acting Supervising Architect.

THE POTTSCO CORPORATION

Exclusive Producer of "Pottsco" Lightweight Concrete Aggregate

One North LaSalle Street, CHICAGO, ILL.

PLANTS IN CHICAGO AND PITTSBURGH

"POTTSCO"—AN INERT, CELLULAR, POROUS, LIGHTWEIGHT AGGREGATE WEIGHING APPROXIMATELY 48 LBS. PER CUBIC FOOT

Uses

Structural Concrete.
Fireproofing Steel Columns and Beams.
Floor Fill.
Roof and Floor Slabs.
Partition Units.
Nailing Concrete.
Back-up Units — Load Bearing.
Special Products.

POTTSCO
Light-Weight Aggregate

A Good Product That Combines the Most in Quality with the Most in Economy

Advantages

Light Weight.
Economical *(first cost and in place)*.
Low Absorption.
High in Insulation Value.
High in Fire Resistance.
High Acoustical Properties.
Excellent for Nailing.
Good Plaster and Stucco Base.
Smooth Finish and Texture.
Excellent Bond.
Low Capillary Attraction.

Structural Concrete

Where saving in weight is desirable for reinforced structural concrete, Pottsco may be used to decided advantage.

Specifications furnished on request.

Fireproofing Steel

A saving in weight of from 40 to 60 lbs. per cu. ft. can be made with Pottsco as compared with ordinary stone concrete. This feature offers the opportunity to effect great savings in cost of steel.

Specifications furnished on request.

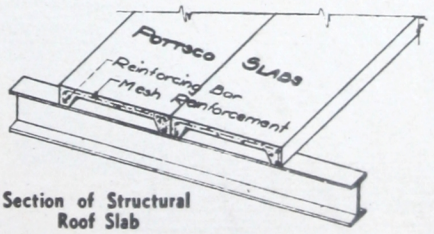
A Magnified Granule of Pottsco

Structural Slabs

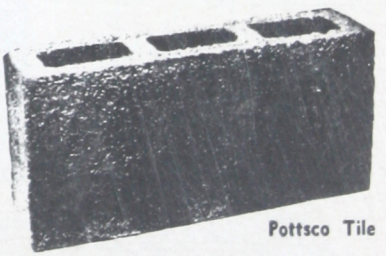
Roof and floor slabs made from Pottsco, possess light weight and structural qualities. Pottsco precast slabs are manufactured and supplied by various reliable concerns. Full information furnished on request.

Building Units

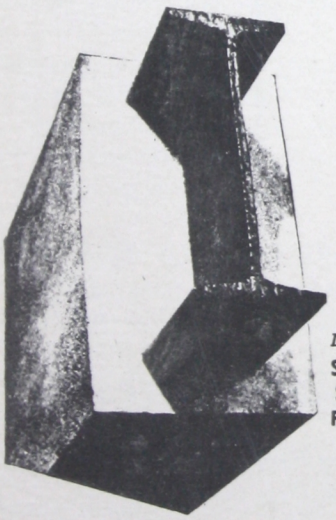
Approximately one hundred reliable concrete products manufacturers supply the trade with quality Pottsco building units for load-bearing back-up and partition uses. They adequately meet the specifications of building codes and the American Concrete Institute.



Section of Structural Roof Slab



Pottsco Tile



Left: Section of a Steel Column Fireproofed by Pottsco Concrete

U. S. Post Office, Chicago, Ill.
Graham, Anderson, Probst & White, Architects
John Griffiths & Son Co., Builders
Pottsco was used throughout this building as floor fill

Floor Fill

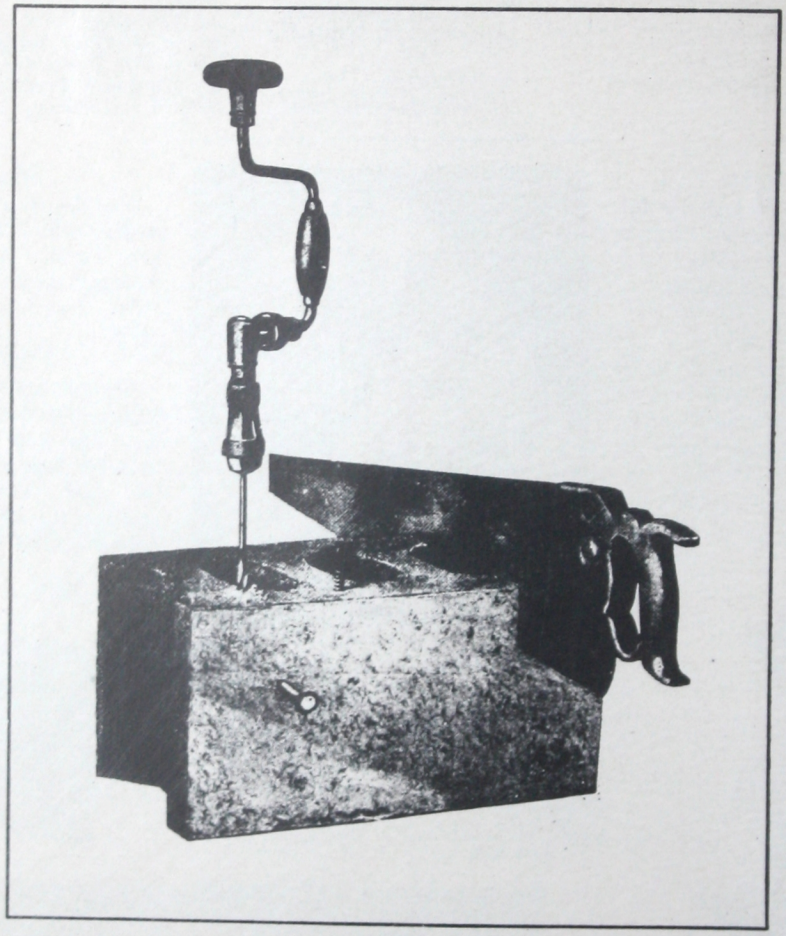
Pottsco floor fill averages 70 to 75 lbs. per cu. ft. with strength in excess of 500 lbs. per sq. in. This strength can be produced with a mix as lean as 1:9.

Samples—Technical and Engineering Data—Quotations—Promptly Furnished

POTTSCO *Lightweight Building* BACK-UP UNITS

Combine those rare merits of Economy and Quality

THIS IS THE FIRST OF A SERIES OF FACT STATEMENTS THAT WILL BE PUBLISHED, IN AN EFFORT TO FAMILIARIZE ARCHITECTS, BUILDERS, CONTRACTORS AND OWNERS WITH AN OPPORTUNITY TO IMPROVE THE QUALITY OF CONSTRUCTION AND SIMULTANEOUSLY SAVE MONEY.



POTTSCO Back-up Units are good for the following reasons:

Low Cost
Lightweight
Low Absorption
Low Capillary Attraction

High Insulation
Fire Resistance
Sound-deadening
Nailing, Sawing and Boring

Direct Plaster and Stucco Base
Light, Clear Color
Smooth Texture and Edges

Exclusively Manufactured and Sold by

All of the following statements are made after extensive research and proof -- Technical reports are on file and will be gladly furnished on request.

LOW COST: By favorable arrangements with the manufacturers of the lightweight aggregate from which **POTTSCO** Units are made, and through our own economical manufacturing facilities, we are able to supply **POTTSCO** lightweight Back-up Units at a cost, which will provide very substantial savings in the total cost of construction as compared with other materials or units adapted to similar construction, and in addition give you a product that possesses many other qualities, so essential to good construction. **POTTSCO** Units are made in many shapes and designs, so that we can meet your every requirement. Let us tell you more about **POTTSCO** lightweight Units and give you a bid.

LIGHTWEIGHT: **POTTSCO** Units are from 35 to 40% lighter in weight than ordinary concrete units. The savings in handling and laying on the job are very substantial—yet they possess a liberal margin of safety in the requirements of the general and local building codes, as to strength and compressive resistance. Although very light, they are very strong—and get stronger with age. **POTTSCO** Units are for load-bearing walls and make ideal partition walls as well.

LOW ABSORPTION: The absorption of **POTTSCO** Units is much lower than exists in competitive products. It is so low that in some cases these units have been approved by State Industrial Building Commissions for outside walls. We recommend them, however, primarily for back-up work.

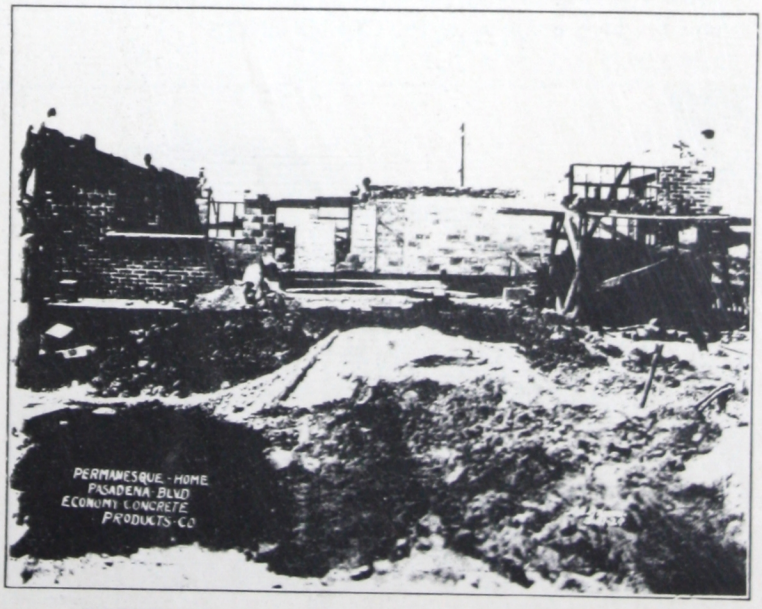
LOW CAPILLARY ATTRACTION: Capillary attraction (the action which takes place when the molecules of a liquid are attracted by a solid, causing the fluid to rise above its level about the sides of a containing vessel), although the absorption as above stated is low, occurs only in slight form. This creates a condition that is highly advantageous from the standpoint of elimination of moisture and dampness and improved insulation.

HIGH INSULATION: The extremely light, porous character of the structure of **POTTSCO** Units, although sufficiently dense for low absorption and capillary attraction, gives a unit of especially high insulation qualities. These units are almost perfectly immune from the conductivity of heat and cold. The structure is such that under normal conditions the transmission of heat and cold is negligible. Obviously, in buildings where insulation must be provided for, **POTTSCO** Units are especially adaptable, and their consideration well deserved.

FIRE RESISTANCE: The ingredient aggregate, from which **POTTSCO** Units are made, has initially been fused at high temperature, so that the fire resistance of **POTTSCO** Units is especially high. **POTTSCO** Units have withstood successfully every fire test to which they have been submitted. Of all their qualities, none are superior to their fire resistance.

SOUND-DEADENING: The same qualities that provide for resistance of heat and cold operate to produce a unit that is effectively sound-proof — another worthy quality for Back-up Units.

NAILING, SAWING AND BORING: These qualities, where they are required, are extremely conducive to economy in construction and are generally recognized as such. Ready proof of the superior qualities of **POTTSCO** Units is always available.



POTTSCO Back-up Units used in Permanesque Homes, Pasadena Boulevard, Milwaukee, Wis.
Furnished by The Economy Concrete Products Co. Wauwatosa, Wis.

POTTSCO Units are easily nailed and the nails HOLD—a real advantage.

DIRECT PLASTER AND STUCCO BASE: The smoothness and adhesion of **POTTSCO** Units make a perfect base for plaster and stucco. The smooth surface texture of the units contributes to saving plaster or stucco materials and accelerates the labor of application. The bonding or biting **POTTSCO** surface insures permanency. There can be no chemical reaction between the base, **POTTSCO** Units, and the plaster or stucco. Furring and lathing may be altogether avoided and that expense saved, if desired. Decorative, colored wall finishes may be applied with remarkable results direct to **POTTSCO** walls.

LIGHT, CLEAR COLOR: The general white or gray color of **POTTSCO** Units offers a pleasing wall, and can be left uncovered with an effect that is artistic.

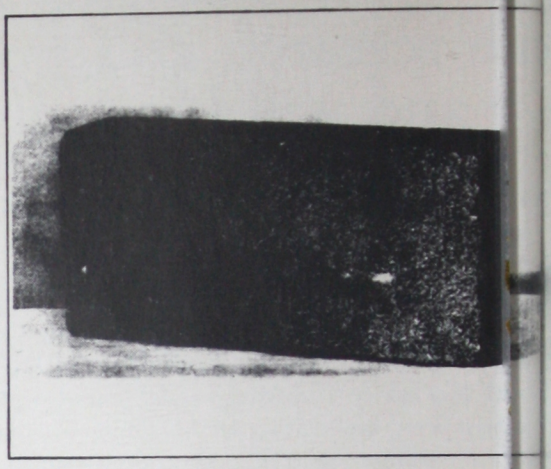
SMOOTH TEXTURE AND EDGES: The perfectness of shape, edges, and surface contributes to even joints and ease of handling and laying. Masons like to handle and lay **POTTSCO** Units. There is no patching of joints and corners. The entire wall surface is true.

WE HAVE secured the exclusive manufacturing rights on **POTTSCO** Units in this territory.

WE ARE prepared to furnish lightweight Back-up Units of almost any size, of the highest quality, at prices that will save you a great deal in your construction.

WE ASK for the opportunity to talk with you and show you conclusively the advantages, the economy, and the high qualities of **POTTSCO UNITS.**

Kalamazoo, Michigan — De Haan Apartments
Another POTTSCO Back-up Job



A Specimen POTTSCO Tile 4" x 8" x 16
A good Back-up Tile and Partition Uni

POTTSCO UNITS
Should Be Used Fo

Apartments
Armories, Auditoriums, Rinks, Stadiu
Banks
Office Buildings
Public Buildings and Institutions
Schools
Churches
Clubs and Lodge Buildings
Garages
Hotels and Restaurants
Hospitals
Warehouses
Commercial and Industrial Buildings
Residences
Stores and Markets
Theatres

And wherever else there s need for a SUPERIO BACK-UP UNIT!

Want To Save Money?

Well—Here Is One Way To Do It—

POTTSCO
Light-Weight Aggregate

POTTSCO cuts your cost for all light-weight concrete construction

because of

LOW COST per cubic yard

LOW COST of handling

LOW COST of mixing

LOW COST of placing

A Magnified Granule of POTTSCO

LOWEST finished cost--HIGHEST finished quality

This circular is being mailed to outstanding contractors to inform them of the paramount features of POTTSCO — the one light-weight aggregate that will enable them to cut costs

Other contractors are realizing this saving - - - so can you.

If you are bidding on government work, you will be particularly interested in the enclosure - turn the page

POTTSCO Light-Weight Concrete Aggregate

has been used successfully for the past five years in all types of building construction » » »

NEW U. S. POST OFFICE
Canal, Van Buren and Harrison Streets
CHICAGO
Largest Post Office Building in the World

Graham, Anderson, Probst & White
Architects

John Griffith & Son Company
Builders

THE NEW CHICAGO POST OFFICE used POTTSCO for all light-weight floor-fill concrete and it gave a first-class job.

POTTSCO is Economical:

Only one grade of aggregate to handle – – use it just as it is unloaded from cars – –

POTTSCO Makes Good Concrete:

Hard – – cellular – – porous – – light - weight
(75 pounds per cubic foot up)

POTTSCO Cuts Labor Costs:

Perfect workability – – perfect bonding – – no harshness in placing

POTTSCO is Approved By:

U. S. Government, City and State Building Codes

« « « THE POTTSCO CORPORATION

Combines These GOOD QUALITIES

Economy
Light weight
Superior Insulation
High compressive strength
Fire-resistant
Chemically inert (no corrosion)
Places and handles cheaply and well
Absorbs sound
Excellent bond

THE NEW U. S. POST OFFICE AT
CINCINNATI, OHIO,
was completed with POTTSCO
as floor-fill throughout

▼▲▼▲▼

Consolidated Engineering Co., Builders
J. E. Smith Co., Concrete Contractor

▼▲▼▲▼

And here is what the contractor says about the job – –

J. E. SMITH COMPANY
BUILDERS
1206 Sherman Avenue
Cincinnati
Telephone, WEst 0613

June 1,
1933.

H. H. Potts Corporation
1 North La Salle St.
Chicago, Ill.

Dear Mr. Potts:

When we formally closed the contract with you for furnishing "Pottsco" for the New Cincinnati Post Office, you stated that in allowing 1800 lbs of Pottsco to the cubic yard, that this 1800 lbs. would yield from ten to fifteen percent more than an actual cubic yard of material.

At the time, we were rather skeptical of your statement, and since we have completed our job, using approximately 2200 yds. of your material, we find that the yield is actually 15% greater.

We had a little difficulty at the start by using too much water and suggest that you caution your future purchasers of Pottsco to be careful about this water content. We like your material very well, handles very nicely and we have floors that have passed a very rigid Government inspection.

Very truly yours,
J. E. SMITH COMPANY
J. Edward Smith

JES:FG

Ask Us for Test Data on POTTSCO Proving These Points

▼▲▼▲▼

Insulation Value	.30 BTU
Compressive Strength	From 400 lbs. to 2000 lbs. Per Square Inch (depending on the mix)
Acoustical Value	45.7 Units Avge. Reduction
Light Weight	From 75 lbs. Per Cubic Foot Up

NORTH LA SALLE STREET, CHICAGO » » »

POTTSCO
Light-Weight Aggregate

A GOOD PRODUCT – – AN ECONOMICAL PRODUCT
FOR MAJOR CONCRETE CONSTRUCTION

POTTSCO, a standard, recognized and approved product, is sold exclusively by THE POTTSCO CORPORATION which makes a **genuine** effort to give **genuine** service » » »

POTTSCO'S BIG ADVANTAGES TO YOU:

Makes A Better Job—
Assures A Winning Bid—
And Saves You Money.

Samples — Technical and Engineering Data — Quotations
Promptly Furnished

Ask us for Delivered Price
on any job you have or any
job you are bidding on » » »

The Pottsco Corporation

One North La Salle Street, Chicago

Telephone: State 1340

INSULATION

Tests and use have definitely proved that POTTSCO concrete is the highest in quality from the standpoint of insulation of any structural concrete thus far developed.

POTTSCO, therefore, deserves consideration in any type of building construction where insulation against heat and cold is needed or important.

C. F. GEBHARDT
MECHANICAL ENGINEER
CHICAGO

March 28, 1929

H. H. Potts Company
228 North LaSalle Street
Chicago, Illinois.

Gentlemen:

We submit herewith the results of tests which we have conducted to determine the rate of heat flow through your "Pottsco" building tile.

Physical Measurements

Length, inches	15-7/8"
Height, inches	7-5/8"
Thickness, inches	8
Density; pounds per cu.ft. of volume	65
Hollow Space; percent of total volume	42.2
Density of Aggregate; pounds per cu.ft.	112.

Heat Conductivity Test

In conducting this test we have used the flat plate method which gives the internal conductivity of the material, surface to surface. In the data below we have expressed this conductivity in B.t.u.s per hour per square foot of wall surface per degree Fahr. of temperature difference between the surfaces of the wall for the 8 inch thickness.

The temperatures on the two sides of the tile were measured with copper - advance thermocouples attached directly to the surface of the tile. You will note that the warm side was maintained at a temperature of 100 degrees Fahr. and the cold side at 45 degrees Fahr. This gives a temperature difference across the tile of 55 degrees Fahr. and a mean or base temperature of 72.5 degrees Fahr. The results are as follows:

Temperatures - Deg. Fahr.				Heat Conductivity
Warm Side	Cold Side	Difference	Mean	B.t.u.s per Hour
100	45	55	72.5	0.30

Respectfully submitted,
Per J. C. Peebles.

Testing Engineer
J. C. Peebles.

C. F. GEBHARDT
MECHANICAL ENGINEER
CHICAGO

December 26, 1929.

H. H. Potts Company
Builders Building
Chicago, Illinois.

Gentlemen:

We have your letter of December 13th relative to our report of March 28, 1929, covering heat conductivity tests of "Pottsco" building unit. We note the question which you raise relative to this material as compared with Haydite. In reply we are pleased to advise as follows:

The "Pottsco" unit which we tested contains approximately 42 percent of hollow space, while all the tests which we have conducted on Haydite have made use of a solid sample. You will note therefore, that a direct comparison between the two materials is rather difficult because the hollow space may or may not be an advantage, depending upon its size and shape and upon the manner in which the units are assembled in the wall.

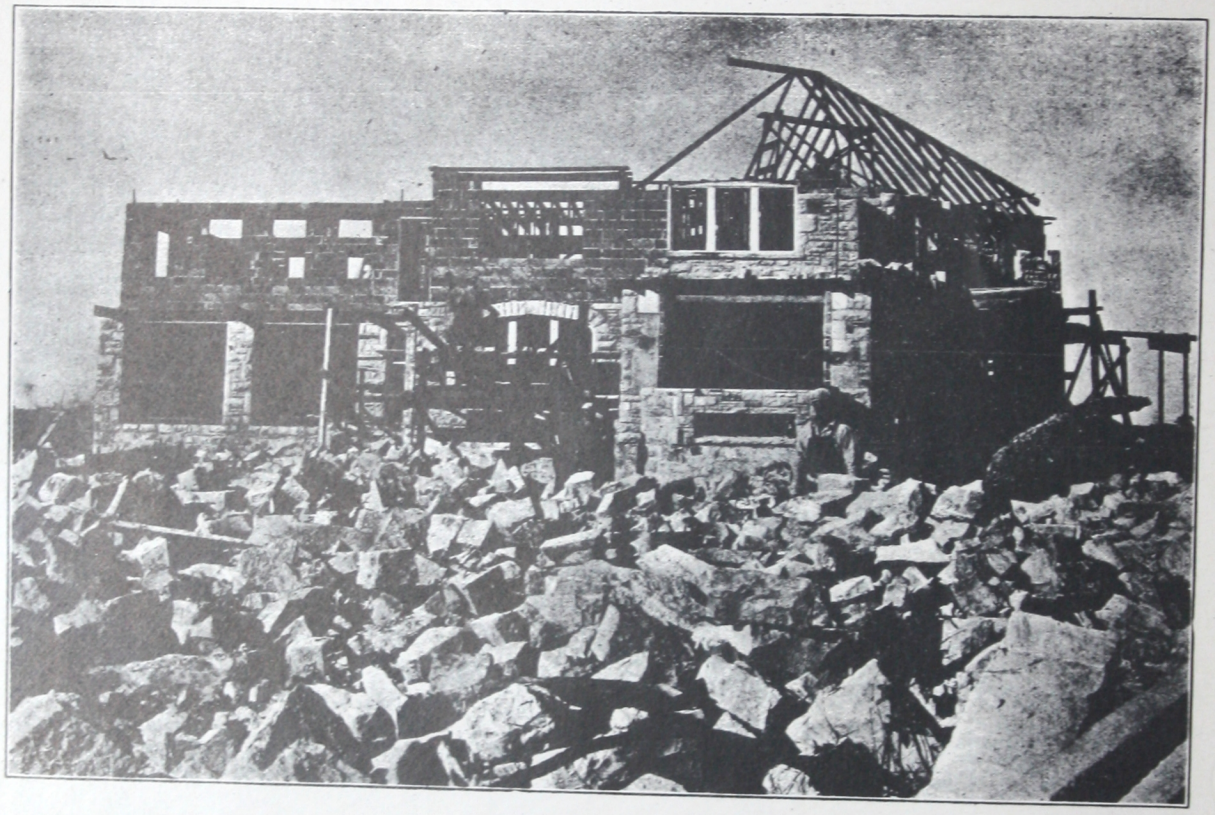
The test on Haydite, a copy of which you enclosed in your letter, was made by us nearly three years ago and was the first which we conducted on this material. Recent tests on commercial Haydite show heat conductivities averaging from 3 to 3.2 B.t.u.s per hour per inch of thickness. Inasmuch as heat conductivity of a homogeneous material is inversely proportional to the thickness it follows that the conductivity through 8 inches of such Haydite would average from 0.375 to 0.40 B.t.u.s per hour. This is to be compared with a conductivity of 0.30 B.t.u.s per hour for the 8 inch "Pottsco" unit. Now it is entirely possible that this difference, apparently in favor of the "Pottsco" unit, may be due to the hollow spaces which the latter contains. An exact answer to this question cannot be made on the basis of the data in hand. Tests on exactly similar units of the two materials would be required before a conclusive comparison could be made.

We have made no tests on Haydite building units of a design similar to the "Pottsco" units nor have any such tests by other experimenters come to our attention. In our opinion tests on solid slabs of Haydite have but little meaning when applied to a building unit such as "Pottsco". On the basis of tests thus far made, the "Pottsco" unit is superior to an equal thickness of solid Haydite.

Very truly yours,
C. F. Gebhardt
Per J. C. Peebles

When you use POTTSCO *You get real* INSULATION

This is the second of a series of educational papers on POTTSCO light-weight concrete building back-up units, intended to acquaint Architects, Builders, Contractors and Owners with an all-quality product.



A representative MILWAUKEE, WISCONSIN, home—a type where quality is demanded. POTTSCO back-up units are used throughout.

The following three pages tell why discriminating Architects and Builders use POTTSCO LIGHT-WEIGHT BACK-UP UNITS

Exclusively Manufactured and Sold by

G. F. GEBHARDT
MECHANICAL ENGINEER
INSPECTION, TESTS AND CONSULTATION — OFFICE AND LABORATORIES ARMOUR INSTITUTE OF TECHNOLOGY
CHICAGO

March 28th, 1929.

H. H. Potts Company
228 North LaSalle Street
Chicago, Illinois

Gentlemen:

We submit herewith the results of tests which we have conducted to determine the rate of heat flow through your "Pottsco" building tile.

Physical Measurements

Length, inches	15-7/8"
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Thickness, inches	8
Density; pounds per cu.ft. of volume	65
Hollow Space; percent of total volume	42.2
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Temperatures - Deg. Fahr. Warm Side	Cold Side	Difference	Mean	Heat Conductivity B.t.u.s. per Hour
100	45	55	72.5	0.30

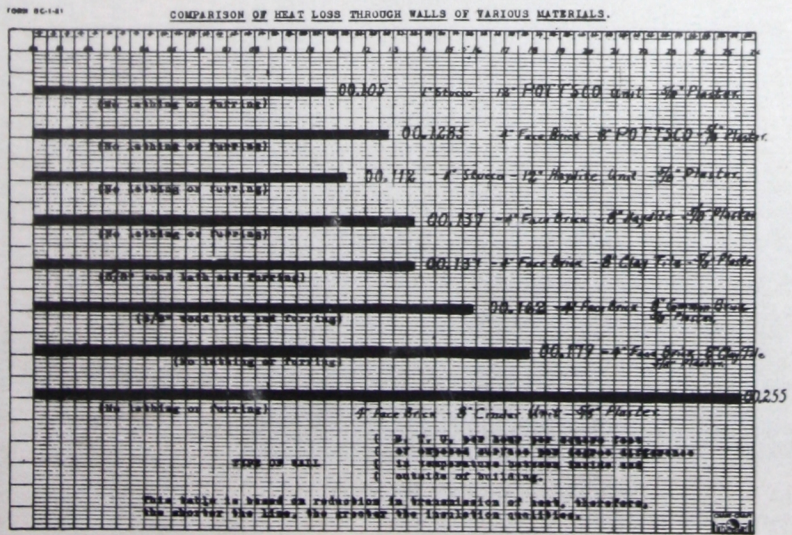
Respectfully submitted,
Per J. C. Peebles.
Testing Engineer
J. C. Peebles.

G. F. Gebhardt, Mechanical Engineer, ARMOUR INSTITUTE OF TECHNOLOGY, submits this report after regulation insulation test on standard 8 x 8 x 16" POTTSCO light-weight blocks.

This laboratory, recognized for its extensive and thorough research work in the field of INSULATION, was purposely selected to make these tests on POTTSCO units, because it is to this laboratory chiefly that insulation products are submitted.

The POTTSCO aggregate from which POTTSCO units are made is so high in INSULATION that it can be shipped in coal or gondola cars during the severest part of the winter, wet and full of moisture and only a thin crust around the sides, bottom and top of car will form. THE COLD WILL NOT PENETRATE A CAR LOAD TO EVEN THE POINT OF FREEZING.

Is it any wonder then that POTTSCO units are high in INSULATION?



Graphically expressed, the relation of INSULATION efficiency of POTTSCO units as shown by above report to other structural units, based on general published reports, reveals an interesting comparison.

POTTSCO walls are INSULATED walls.

A Magnified Granule of POTTSCO

The fine, porous, granular, cellular structure of POTTSCO aggregate when combined with cement, forms a hard mass of sponges, filled with minute air spaces and sealed over with cement, which kills the transmission of heat and cold.

The physical characteristics of this combination of cement and POTTSCO sets up an impervious barrier to the atmospheric elements and accomplishes the ideals of INSULATION.

HERE IS JUST A PLAIN, PRACTICAL PROOF

You can lay up a plain wall of POTTSCO units and apply intense heat to one side. Heat it to from 1500 to 2000 degrees F. Bring it to a red hot heat. Keep the heat applied for a long time. (These tests have been run from 4 to 100 hours.) Then place your hand on the opposite side of the wall and keep it there as long as you like. You will feel no more than a little warmth.

With what other structural building unit can this test be made?

If you can have one side of the wall, say 1500 degrees and the opposite side say 150 degrees—a reduction of 1350 degrees in say an 8-inch wall, what chance has the cold at say 20 degrees below zero to penetrate the wall? NO INSULATION MATERIAL IS BETTER THAN ITS ABILITY TO RESIST THE TRANSMISSION OF HEAT AND COLD.

UNDERWOOD HOTEL, WAUWATOSA, WIS.

Another representative job where POTTSCO back-up units were used throughout.

—Architect A. L. Seidenschwartz, Milwaukee, Wis.

ROBERT W. HUNT COMPANY, ENGINEERS

CHICAGO PITTSBURGH NEW YORK
LONDON ST. LOUIS SAN FRANCISCO

Name 23932-1 Order B-3845
Report 26476

Chicago, Illinois
August 31, 1928.

H. H. Potts Company,
Builders Building,
Chicago, Illinois.

Gentlemen:-

The following is result of heat test, authorized by your letter of August 25th, on two-8x8x16" building blocks, which were delivered to our laboratory by your representative.

The test performed was in the nature of a preliminary observation and no absolute temperature determinations were made.

Blocks under test were surrounded to a certain extent by other blocks in order to confine the heat as much as possible and were then subjected to an air blast gas flame for four hours.

The area in immediate contact with the flame came to a bright cherry red which is generally considered indicative of a temperature of about 1500 degrees Fahrenheit. The other face of the block was then not too hot to be touched by the hand.

While under these conditions the blocks were deluged with cold water. No cracking or spalling off of the blocks was apparent from the heat or from the cooling by water.

Respectfully submitted,

HSB:MB H S Bowie ROBERT W. HUNT COMPANY.

INSULATION is basic.

INSULATION is the primary object of all building.

Housing has never meant more than an idea to separate that which needs protection, from the outside world.

The Esquimo's igloo, the gypsie's tent, the pioneer sod hut of the western plains, and on and up to and inclunding today's ultra-modern, monumental structures, are examples of man's attempt to INSULATE from the climates and elements of the Great Outdoors.

Because structural materials have not provided the full requirements of INSULATION, special insulating materials have been developed, and worthy as they are for their purpose, their use constitute an imposing added burden financially in the total cost of construction.

WE ARE MANUFACTURING AND OFFERING POTTSCO LIGHT-WEIGHT BACK-UP UNITS FOR ALL TYPES OF CONSTRUCTION IN THIS TERRITORY, BECAUSE WE CAN GIVE YOU STRUCTURAL WALLS AND AT THE SAME TIME INSULATION AT ONE COST.

Some other advantages of POTTSCO back-up units

Light-weight and easy to lay.

Extremely sound-proof.

Direct nailing or boring.

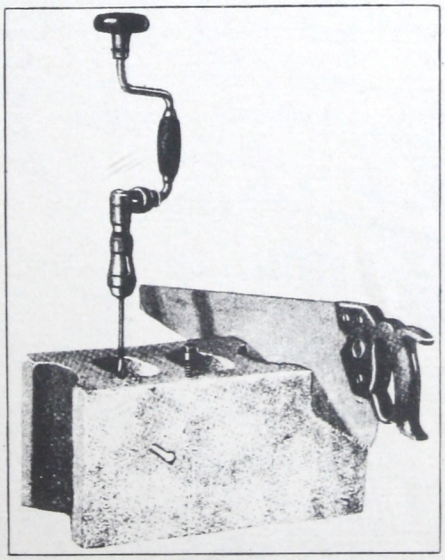
Plaster or stucco direct. Certain characteristics make these units especially an ideal plaster and stucco base.

Fire-proof.

Structural strength (Get stronger with age).

No contraction or expansion.

Very low absorbtion.



"A Picture of a Story"

Use POTTSCO units for

Apartments.
Armories, Auditoriums, Rinks, Stadiums,
Banks
Office Buildings.
Public Buildings and Institutions.
Schools.
Churches.
Clubs and Lodge Buildings.
Garages
Hotels and Restaurants.
Hospitals.
Warehouses.
Commercial and Industrial Buildings.
Residences.
Stores and Markets.
Theatres.

AND WHEREVER ELSE THERE IS NEED FOR A SUPERIOR BACK-UP UNIT.

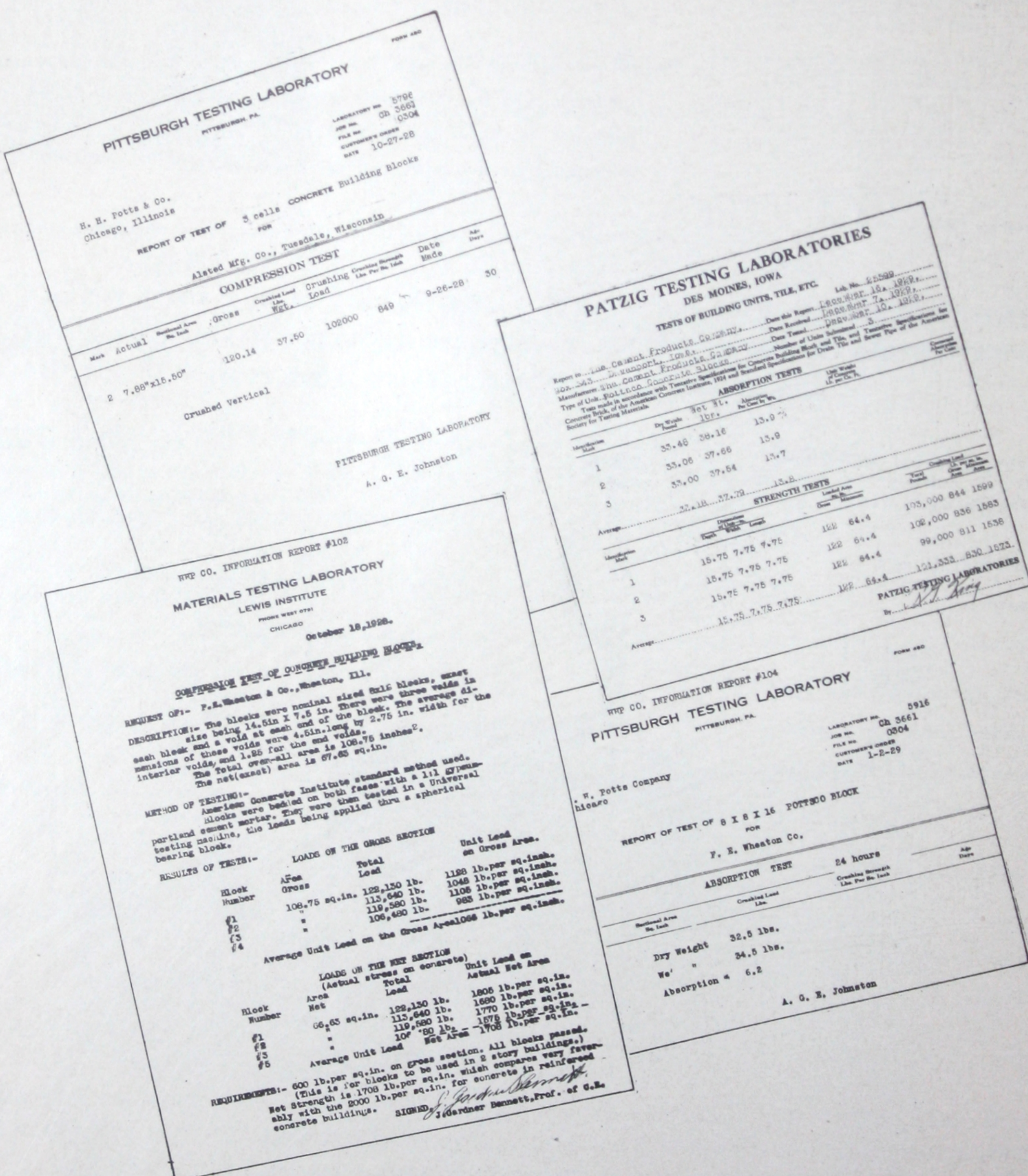
WE ARE THE SOLE MANUFACTURERS OF POTTSCO BACK-UP UNITS IN THIS TERRITORY AND ARE ATTEMPTING TO RENDER A REAL SERVICE BY PROVIDING A SUPERIOR QUALITY PRODUCT AT COSTS WHICH MATERIALLY LESSEN THE TOTAL COST OF CONSTRUCTION. POTTSCO UNITS ARE MADE IN NINE STATES.

A TELEPHONE CALL, A CARD, A LETTER, will bring a representative to see you at your convenience, who will give you all the information you wish. We extend a cordial invitation to visit our plant and office and discuss this remarkable product and its uses.

COMPRESSIVE AND ABSORPTION TESTS

The following reproductions of tests are representative of the many that have been made, which establish conclusively that POTTSCO meets all the standard building code requirements as to strength and absorption.

Copies of additional reports will be furnished on request.



FORM 480

PITTSBURGH TESTING LABORATORY

PITTSBURGH, PA.

LABORATORY No. 5796
JOB No. Ch 3661
FILE No. 0304
CUSTOMER'S ORDER
DATE 10-27-28

H. H. Potts & Co.
Chicago, Illinois

REPORT OF TEST OF 3 cells CONCRETE Building Blocks
FOR
Alsted Mfg. Co., Tuesdale, Wisconsin

COMPRESSION TEST

Mark	Actual	Sectional Area Sq. Inch Gross	Crushed Load Lbs. Wgt.	Crushing Load	Crushing Strength Lbs. Per Sq. Inch	Date Made	Age Days
2	7.88"x15.50"	120.14	37.50	102000	849	9-26-28	30

Crushed Vertical

PITTSBURGH TESTING LABORATORY

A. G. E. Johnston

PATZIG TESTING LABORATORIES

DES MOINES, IOWA

TESTS OF BUILDING UNITS, TILE, ETC.

Report to The Cement Products Company, Box 343 Davenport, Iowa.
Lab. No. 25599
Date this Report December 16, 1929.
Date Received December 7, 1929.
Date Tested December 10, 1929.
Manufacturer The Cement Products Company
Number of Units Submitted 3
Type of Unit Pottsco Concrete Blocks

Tests made in accordance with Tentative Specifications for Concrete Building Block and Tile, and Tentative Specifications for Concrete Brick, of the American Concrete Institute, 1924 and Standard Specifications for Drain Tile and Sewer Pipe of the American Society for Testing Materials.

ABSORPTION TESTS

Identification Mark	Dry Weight Pound	Wet Wt. lbs.	Absorption Per Cent by Wt.
1	33.46	38.16	13.9 %
2	33.06	37.66	13.9
3	33.00	37.54	13.7
Average	33.18	37.79	13.8

STRENGTH TESTS

Identification Mark	Depth	Width	Length	Loaded Area Gross	Loaded Area Minimum	Total Pounds	Crushing Load Gross Area	Crushing Load Minimum Area
1	15.75	7.75	7.75	122	64.4	103,000	844	1599
2	15.75	7.75	7.75	122	64.4	102,000	836	1583
3	15.75	7.75	7.75	122	64.4	99,000	811	1538
Average	15.75	7.75	7.75	122	64.4	101,333	830	1573

PATZIG TESTING LABORATORIES
By [signature]

HWP CO. INFORMATION REPORT #102

MATERIALS TESTING LABORATORY

LEWIS INSTITUTE

PHONE WEST 0791

CHICAGO

October 18,1928.

COMPRESSION TEST OF CONCRETE BUILDING BLOCKS.

REQUEST OF:- F.E.Wheaton & Co.,Wheaton, Ill.

DESCRIPTION:- The blocks were nominal sized 8x16 blocks, exact size being 14.5in X 7.5 in. There were three voids in each block and a void at each end of the block. The average dimensions of these voids were 4.5in.long by 2.75 in. width for the interior voids, and 1.25 for the end voids.
The Total over-all area is 108.75 inches².
The net(exact) area is 67.63 sq.in.

METHOD OF TESTING:-
American Concrete Institute standard method used. Blocks were bedded on both faces with a 1:1 gypsum-portland cement mortar. They were then tested in a Universal testing machine, the loads being applied thru a spherical bearing block.

RESULTS OF TESTS:- LOADS ON THE GROSS SECTION

Block Number	Area Gross	Total Load	Unit Load on Gross Area.
#1	108.75 sq.in.	122,130 lb.	1128 lb.per sq.inch.
#2	"	113,640 lb.	1048 lb.per sq.inch.
#3	"	119,580 lb.	1105 lb.per sq.inch.
#4		106,480 lb.	983 lb.per sq.inch.

Average Unit Load on the Gross Area 1066 lb.per sq.inch.

LOADS ON THE NET SECTION
(Actual stress on concrete)

Block Number	Area Net	Total Load	Unit Load on Actual Net Area
#1	66.63 sq.in.	122,130 lb.	1805 lb.per sq.in.
#2	"	113,640 lb.	1680 lb.per sq.in.
#3	"	119,580 lb.	1770 lb.per sq.in.
#5		10[illegible]80 lb.	1575 lb.per sq.in.

Average Unit Load Net Area 1708 lb.per sq.in.

REQUIREMENTS:- 600 lb.per sq.in. on gross section. All blocks passed. (This is for blocks to be used in 2 story buildings.)
Net Strength is 1708 lb.per sq.in. which compares very favorably with the 2000 lb.per sq.in. for concrete in reinforced concrete buildings.

SIGNED, J.Gardner Bennett,Prof. of C.E.

FORM 480

HWP CO. INFORMATION REPORT #104

PITTSBURGH TESTING LABORATORY

PITTSBURGH, PA.

LABORATORY No. 5916
JOB No. Ch 3661
FILE No. 0304
CUSTOMER'S ORDER
DATE 1-2-29

. W. Potts Company
hicago

REPORT OF TEST OF 8 X 8 X 16 POTTSCO BLOCK
FOR
F. E. Wheaton Co.

ABSORPTION TEST 24 hours

Dry Weight 32.5 lbs.
We' " 34.5 lbs.
Absorption = 6.2

A. G. E. Johnston

FORM 480

PITTSBURGH TESTING LABORATORY

PITTSBURGH, PA.

LABORATORY No. 5797
JOB No. Ch 3661
FILE No. 0304
CUSTOMER'S ORDER
DATE 10-27-28

H. H. Potts Co.
Chicago, Illinois

REPORT OF TEST OF 3 CONCRETE Building Blocks

FOR

Armbuster, Aurora, Illinois

COMPRESSION TEST

Mark	Actual	Sectional Area Sq. Inch	Weight	Crushing Load Lbs.	Crushing Strength Lbs. Per Sq. Inch	Date Made	Age Days
1	15.50x7.75	120.14"	35.50	84000	700	9-15-28	42

Crushed Vertical

PITTSBURGH TESTING LABORATORY

A. G. E. Johnston

HHP CO. INFORMATION REPORT #110

COPY

PITTSBURGH TESTING LABORATORY
Pittsburgh, Pa.

Chicago Office Report

Zion Institution & Industries,
Zion, Illinois.

REPORT OF TEST OF 16x8x8" POTTSCO Blocks.

COMPRESSION TEST THREE CELLS - Crushed Vertical.

Mark	Sq. inches Sectional Area	Crushing Load Pounds	Crushing Strength lbs per sq. in. G.A.	Actual Size	Age Days
1	122.06"	130,000	1,065	15.7x7.75"	30
2	122.06"	146,000	1,196	15.7x7.75"	30
3	122.06"	176,000	1,442	15.7x7.75"	30

	DRY (a)	Weight Saturated (b)	Absorption per cent $\frac{b-a \times 100}{2}$
1	29.00 lbs.	34.75 lbs.	19.8 per cent
2	29.00 lbs.	35.50 lbs.	22.4 per cent
3	28.75 lbs.	34.62 lbs.	20.1 per cent

Blocks for this test were selected from yard by Mr. Walter Nimblick, Building Commissioner, Waukegan, Illinois.

(Official copy of this report is on file in office of H. H. Potts Company, Builders Building, Chicago, Illinois.)

COMMISSIONERS
FRED M. WILCOX, CHAIRMAN
R. G. KNUTSON
VOYTA WRABETZ
A. J. ALTMEYER, SECRETARY

INDUSTRIAL COMMISSION
OF
WISCONSIN

STATE CAPITOL ANNEX
MADISON

SAFETY AND SANITATION DEPARTMENT
R. McA. KEOWN, ENGINEER

DIVISIONS
BOILER
BUILDING
ELECTRICAL
ELEVATOR
FACTORY INSPECTION
FIRE PREVENTION
MINE AND QUARRY

August 20, 1929

Alsted Mfg. Company,
Trussdell, Wisconsin

Gentlemen:

We have a test report on test of your 8 x 8 x 16 inch three cell granulated slag concrete block made on September 26th, 1928 and on which the compression test was made on November 1st, 1928.

The blocks were tested on the 8 x 16 inch face with cells vertical. The blocks were marked AMCO stencilled on each block.

According to the results of the test your blocks satisfactorily passed the test required by the building code and are, therefore, acceptable for use in load-bearing and outside walls in public buildings and places of employment in the state of Wisconsin.

Yours very truly,
INDUSTRIAL COMMISSION

EWC:MV

E. W. Callen
Building Inspector.

WHP CO. INFORMATION REPORT #105

PITTSBURGH TESTING LABORATORY

ESTABLISHED 1867

INSPECTING ENGINEERS AND CHEMISTS

PITTSBURGH, PA.

CHICAGO OFFICE:
ROOMS 1111-1115 ENGINEERING BUILDING
205 WEST WACKER DRIVE
H. H. HOLMES, Manager — TELEPHONE, RANDOLPH 3880

OFFICES: NEW YORK, BOSTON, PHILADELPHIA, BUFFALO, CLEVELAND, DETROIT, CHICAGO, MILWAUKEE, CINCINNATI, ST. LOUIS, BIRMINGHAM, TAMPA, MIAMI, NEW ORLEANS, DALLAS

REPRESENTED: BOSTON, SAN FRANCISCO, LOS ANGELES, SEATTLE, TACOMA, PORTLAND, VANCOUVER, TORONTO, MONTREAL, ENGLAND, SCOTLAND, FRANCE, BELGIUM, GERMANY

SUBJECT

Refer to FILE No. Ch 3661

Lab. # 5742

September 29,1928

H.H. Potts Company
Chicago, Illinois

16.00" x 8.00" x 8.00" Blocks

Made by Westner Forest, Park, Illinois

THREE CELLS — CRUSHED HORIZONTAL.

MARK	DIMENSIONS INCHES ACTUAL SIZE	GROSS AREA SQ.INCHES	CRUSHING LOAD LBS.	CRUSHING STRENGTH LBS PER SQ. IN. GROSS AREA
#2	15.75x8.00	126.00	110,000	873
#3	"	126.00	90,000	714

PITTSBURGH TESTING LABORATORY

5 copies:

WHP CO. INFORMATION REPORT #101

PITTSBURGH TESTING LABORATORY

PITTSBURGH, PA.

FORM 480

H. H. Potts Company
Chicago.

LABORATORY No. 5935
JOB No. Ch 3661
FILE No. 0304
CUSTOMER'S ORDER
DATE 1-19-29

REPORT OF TEST OF 16 x 8 x 8 CONCRETE BLOCKS
Concrete Specialty FOR
H. H. Potts Co.

3 Cells — COMPRESSION TES — Crushed Vertical

Mark	ACTUAL SIZE	Crushing Load Lbs.	Crushing Strength Lbs. Per Sq. Inch	GROSS AREA	Age Days
2 A	15.75 x 8.00	153000	1214	126.00	
2 B	15.75 x 8.00	158500	1258	126.00	

A. C. E. Johnston

Information Report No. 106

COPY

The University of Wisconsin
College of Engineering - Department of Mechanics
Laboratory for Testing Materials

Result of tests on Blocks,
Made for: Alsted Mfg. Company
Samples selected by: Manufacturer
Scoring or facing: None
Brands or Marks: AMCO stencilled on each block
Additional Information: Made Sept.26, 1928, POTTSCO 1:8 Mix. Mixed 3 minutes dry; 2 minutes wet; Universal stripper machine.

Size and type; 8x8x16", 3-cell
Address: Truesdell, Wisconsin.

Block Number	Actual Size	Area Gross	Total Load	Load per square inch, gross area
1	7.9x15.7"	124.00"	90,550	730
2	7.9x15.7"	124.00"	104,250	840
3	7.9x15.7"	124.00"	1 950	970

ABSORPTION

Block No. 1 - 14.0 per cent.
Block No. 2 - 15.0 per cent.
Block No. 3 - 14.3 per cent.

Net weight about 110 lbs per cubic foot. Absorption limit about 15%

THE UNIVERSITY OF WISCONSIN
(Signed) Paul T Norton Jr,
Observer.

(Official signed copy of this report is on file in office of H. H. Potts Company, Builders Building, Chicago, Illinois.)

COMPRESSION TESTS OF 8 x 8 x 16" POTTSCO UNITS
Tests made by Portland Cement Association Laboratory

Location of Plant	Manufacturer	Size	Compressive Strength lbs. per square inch Gross Area	Net Area
Wheaton, Illinois	F. E. Wheaton Co.	8x8x16"	1070	1715
Wheaton, Illinois	F. E. Wheaton Co.	4x8x16"	1030	1525
Milwaukee, Wisc.	Economy Concrete Products Company	8x8x16"	885	1526
Milwaukee, Wisc.	Economy Concrete Products Company	Brick	1988	1988
Cleveland, Ohio	Cleveland Roofing Tile Company	8x8x16"	717	1160
Royal Oak, Mich.	C. A. Wilcox	8x8x16"	893	1431
Muskegon, Michigan	Marble Cement & Coal Co.	8x8x16"	1338	2160
Kalamazoo, Mich.	Kalamazoo Cement Prod.Co.	8x8x16"	937	1361
Benton Harbor, Mich.	B. A. Crandall	8x8x16"	848	1310
Gary, Indiana	Kline Concrete Prod. Co.	8x8x16"	826	1431
Davenport, Iowa	Cement Products Company	8x8x16"	840	
Detroit, Michigan	Standard Building Prod.Co.	8x8x16"		
Truesdell, Wisc.	Alsted Manufacturing Co.	8x8x16"	966	159

The University of Wisconsin
College of Engineering Department of Mechanics
Laboratory for Testing Materials

April 6, 1929.

Results of Freezing and Thawing Tests on Pottsco Concrete Building Blocks, made for the Economy Concrete Products Co., Wauwatosa, Wisconsin.

The prupose of these tests was to determine the effect of repeated freezing and thawing on the strength and absorption of Concrete Building Blocks made with Pottsco aggregate and Portland cement, and also to note the loss in weight and the spalling or other surface deterioration due to the freezing and thawing.

Twenty blocks, all 8x8x16-in., 3 cell, were received at the laboratory on January 10, 1929, all of the blocks having been sealed by Mr. G. W. Porter, for the Wisconsin Concrete Products Association. The card accompanying the blocks states that they were made on December 7, 1928; aggregate, Pottsco, all through 1/2-in. screen; 1:9 mix; Ideal 21 cu. ft. batch mixer; 3 minutes dry, 3 minutes wet; Anchor stripper; cured 18 hours in steam. All blocks were stencilled on the end with the manufacturer's mark, an E in a hexagon.

Fifteen of the blocks were used in these tests, five of them being subjected to 100 reversals of freezing and thawing and then tested for strength, absorption and loss in weight, five of them being tested at the beginning of the run for strength and absorption in the regular manner, and the other five being held in the laboratory until the freezing and thawing run was completed, when they also were tested for strength and absorption in the regular manner. The expectation was that this would give an indication of the normal increase in strength of the blocks under ordinary conditions during the time required to complete the freezing and thawing on the five blocks being tested in that way.

The blocks for each test were picked at random as follows. The twenty blocks were arranged in order of seal numbers and beginning at the lowest number the first, fifth, ninth, thirteenth and seventeenth were selected for freezing and thawing and numbered 1 to 5, inclusive. Every fourth block beginning with the second was selected for testing at the beginning of the freezing run, these blocks being numbered 6 to 10, inclusive. Every fourth block beginning with the third was selected for testing at the end of the freezing run, these blocks being numbered 11 to 15, inclusive.

The attached regular printed report blanks, sheets 1, 2 and 3, give the results of the regular strength, voids and absorption tests on the three sets of blocks, the absorption data given thereon for blocks 1 to 5 being for the blocks before the freezing test was started. Absorption on these blocks after the freezing test was completed was also determined and is given later on in this part of the report. Of the attached

Sheet 1 gives report on blocks tested before freezing began.
" 2 " " " " " after " ended.
" 3 " " " " subjected to freezing and thawing.

WEATHERING TESTS ON POTTSCO

The University of Wisconsin made the standard weathering test on POTTSCO building units which is reflected by the report on this and the following page.

In the approximate six years that POTTSCO building units have been used in general construction, no disintegration tendencies have developed in any job.

The report speaks for itself and we believe definitely establishes the longevity of POTTSCO construction.

Economy Conc. Prod. Co., Freezing Test, #2.

Actual freezing was begun on January 17, 1929 and was completed on March 26, 1929. When possible the freezing was accomplished by placing the blocks outside the laboratory, but when the outside temperature was not sufficiently low the blocks were frozen in the laboratory freezer. 100 complete reversals of freezing and thawing were made, the thawing being accomplished by placing the frozen blocks in water and leaving them in this water until thoroughly thawed out. The blocks were saturated with water before being frozen for the first time, being in water for 72 hours, and were always thereafter placed in the freezing atmosphere immediately upon being removed from the water in which they had been thawed. The water in which the blocks were thawed out was heated somewhat by running live steam into it, so as to accelerate the thawing, but no attempt was made to raise this water very much above the regular laboratory temperature of about 70°F.

In order to determine whether the blocks were completely frozen or thawed as the case might be a dummy specimen of the same material was used, in which a hole had been drilled to a point in the middle of the thickest web, half way from the top to the bottom of the block. This hole was partly filled with refrigerator machine oil having a low freezing point and a thermometer of the immersion type placed therein, the opening to the hole being tightly corked.

Readings were taken of temperatures as ollows, the average of the 100 readings being given in each case:

Temp. of freezer	at	beginning	of freezing,	Av. 14° F.
" " "	"	end	" "	13
" " dummy	"	"	" "	17
" " water	"	beginning	" thawing,	76
" " "	"	end	" "	94
" " dummy	"	"	" "	61

Towards the middle of the freezing run block 2 begun to spall on the bottom face, as made, and this spalling progressed until nearly all of this face had crumbled away to a depth of about one inch, after which this spalling practically ceased, there being very little deterioration during the last fifteen or twenty reversals. This block had a double cross (#) scratched on one end and the manufacturer states that this was one of a lot of rejected blocks which had been included in this lot of blocks by mistake. In addition to the bad spalling of the bottom of this block there was considerable surface deterioration on the sides and ends to a maximum depth of about 1/4-in., the total area so affected being about 100 square inches on the sides and ends. In order to make a strength test of this block it was necessary to build up the damaged face with a 1:1 Lumnite mortar, and it will be noted that this block was the only one tested which was below the 700 pounds per square inch required by the Code, either before or after freezing, and also that it was the only block having a material loss in weight after freezing.

Of the other four blocks that were subjected to the freezing test, there was some surface deterioration to a depth of only about 1/16-in. or less, and this did not show up at all until about 90 reversals had been made. The area affected was approximately 25 to 30 square inches for block 3, 50 square inches for block 1, and 75 square inches for block 4 and 5, most of it being on the ends or the sides near the ends.

Economy Conc. Prod. Co., Freezing Test. #3.

The data for absorption and loss in weight of blocks 1 to 5 after freezing is as follows:

Block	Weights after freezing Dry lb.	Wet lb.	% Absorption	Loss in dry weight due to freezing lb.	%
1	33.7	39.9	18.4	0.6	1.8
2	30.0	36.1	20.3	2.9	8.8
3	34.1	40.1	17.6	0.1	0.3
4	32.6	39.2	20.3	0.6	1.8
5	33.8	40.0	18.3	0.3	0.9

It will be noted from the strength tests that the strength of the five blocks 11 to 15 which were stored in the laboratory and tested at end of the freezing period was less than the strength of the blocks 6 to 10 which were tested at the beginning of the freezing period. While blocks cured in steam gain in strength only very slightly with age there should be no retrogression in strength. All of the blocks were tested on the same machine and in the same manner. An examination of the dry weights of the various blocks indicates that the strength varies with the dry weight which shows the value of good tamping and may account for the strength difference mentioned. Blocks 1 to 5 which went through the freezing test had an average strength of 1064 pounds per square inch and an average dry weight of 34.0 pounds, defective block 2 being omitted in each case; blocks 6 to 10 which were tested at the beginning of the freezing run had an average strength of 1082 pounds per square inch and an average dry weight of 34.9 pounds; blocks 11 to 15 which were tested at the end of the freezing run had an average strength of 973 pounds per square inch and an average dry weight of 34.0 pounds. (Comparisons should be on the basis of dry weights as the weights given under part B of the reports were not all gotten at the same time.) Certainly in the case of blocks 1, 3, 4 and 5 there is no indication that the repeated freezing and thawing had any bad effect on the strength.

Detailed data of the dates and hours of each reversal, with the individual temperatures, etc., together with a sketch of each block showing the extent of any surface deterioration, are on file in this office.

Paul T. Norton, Jr.

Paul T. Norton, Jr.,
Asst. Prof. of Mechanics,
62A Engineering Building.

THE UNIVERSITY OF WISCONSIN

COLLEGE OF ENGINEERING — DEPARTMENT OF MECHANICS — Sheet 1.

Laboratory for Testing Materials

Results of Tests on Pottsco Conc. Building Blocks. Size and Type 8x8x16-in., 3 cell.

Made for Economy Concrete Products Co. Address Wauwatosa, Wisconsin

Samples selected by G. W. Porter for WCPA

Scoring or facing None

Brands or Marks F in hexagon, stencilled on end.

Additional information Made December 7, 1928; aggregate, Pottsco; all through 1/2-in. screen; 1:9 mix; Ideal 21 cu.ft. batch mixer, 3 minutes dry, 3 minutes wet; Anchor stripper; cured 18 hours in steam.

These five blocks picked at random from lot sent for freezing tests, and tested at time freezing test was begun on other blocks.

(B) COMPRESSION TEST DATA

Loaded on 8x16-in. faces, cells vertical. Bedded in #5 stucco.

Mark or Number	6	7	8	9	10
Seal Number WCPA	1256	1262	1266	1270	1274
Weight of Block (lb.)	37.7	37.2	37.9	36.8	36.7
Height (inches)	7.7	7.7	7.7	7.7	7.7
Dimensions of Loaded Cross Section (in.)	8.0x15.75	8.0x15.75	8.0x15.75	8.0x15.75	8.0x15.75
Area of Section (Sq. in.)	126.0	126.0	126.0	126.0	126.0
MAXIMUM LOAD (lb.)	149,550	131,750	140,550	132,900	126,600
ULTIMATE STRENGTH, (lb. per sq. in.)	1190	1050	1120	1050	1000
Color					
Character of Fracture	#6, complete shear; #8, shear except one end; others,				
Remarks	shear except one side. Appearance OK.				

Date of Compression Test January 23, 1929

(C) VOIDS TEST DATA

Mark or Number	6	7	8	9	10
Section Area (Sq. in.)	126.0	126.0	126.0	126.0	126.0
Number of Cells	3, circular ends; 2 end depressions, round ends.				
Cell Dimensions (in.)	3.1x5.2 (14.0)	same	same	same	same
End depressions	1.3x4.8 (5.5)	same	same	same	same
Cell Area (Sq. in.)	53.0	53.0	53.0	53.0	53.0
PERCENT VOIDS	42	42	42	42	42

(D) ABSORPTION TEST DATA (Weight in Pounds)

Mark or Number	6	7	8	9	10
Weight after immersion in water 48 hr.	40.9	40.4	40.9	40.0	40.4
Weight, Dry Specimen	35.6	34.6	34.9	34.7	34.6
Gain in Weight	5.3	5.8	6.0	5.3	5.8
PERCENT ABSORPTION	14.9	16.8	17.2	15.3	16.8

Net weight about 100 lb./cu.ft. Absorption limit about 17%

Madison, Wisconsin, January 23, 1929 Paul T. Porter Observer.

We reserve the right to publish the results of all tests made at this laboratory.
We withhold names of parties from publication if requested.

Note — The Wisconsin Building Code requirements are: 700 lb. per sq. inch strength and not over 12 per cent absorption.

THE UNIVERSITY OF WISCONSIN

COLLEGE OF ENGINEERING — DEPARTMENT OF MECHANICS — Sheet 2.

Laboratory for Testing Materials

Results of Tests on Pottsco Conc. Building Blocks. Size and Type 8x8x16-in., 3 cell.

Made for Economy Concrete Products Co. Address Wauwatosa, Wisconsin.

Samples selected by G. W. Porter, for WCPA

Scoring or facing None.

Brands or Marks F in hexagon, stencilled on end.

Additional information Made December 7, 1928; aggregate, Pottsco; all through 1/2-in. screen; 1:9 mix; Ideal 21 cu.ft. batch mixer; 3 minutes dry, 3 minutes wet; Anchor stripper; cured 18 hours in steam.

These five blocks picked at random from lot sent for freezing tests, and tested at the time the freezing test on the freezing specimens was completed.

(B) COMPRESSION TEST DATA

Loaded on 8x16-in. faces, cells vertical. Bedded in #5 stucco.

Mark or Number	11	12	13	14	15
Seal Number WCPA	1259	1263	1267	1271	1275
Weight of Block (lb.)	34.8	34.1	36.2	35.9	35.6
Height (inches)	7.7	7.7	7.7	7.7	7.7
Dimensions of Loaded Cross Section (in.)	8.0x15.75	8.0x15.75	8.0x15.75	8.0x15.75	8.0x15.75
Area of Section (Sq. in.)	126.0	126.0	126.0	126.0	126.0
MAXIMUM LOAD (lb.)	118,900	108,050	135,050	127,300	110,900
ULTIMATE STRENGTH, (lb. per sq. in.)	945	860	1170	1010	880
Color					
Character of Fracture	#11 & 12, shear one side; others complete shear. Appearance				
Remarks	OK.				

Date of Compression Test April 2 1929

(C) VOIDS TEST DATA

Mark or Number	11	12	13	14	15
Section Area (Sq. in.)	126.0	126.0	126.0	126.0	126.0
Number of Cells	3, circular ends; 2 end depressions, round ends.				
Cell Dimensions (in.)	3.1x5.2(14.0)	same	same	same	same
End depressions	1.3x4.8(5.5)	same	same	same	same
Cell Area (Sq. in.)	53.0	53.0	53.0	53.0	53.0
PERCENT VOIDS	42	42	42	42	42

(D) ABSORPTION TEST DATA (Weight in Pounds)

Mark or Number	11	12	13	14	15
Weight after immersion in water 48 hr.	39.9	39.5	41.0	41.0	40.2
Weight, Dry Specimen	33.4	32.6	34.9	34.6	34.2
Gain in Weight	6.5	6.9	6.1	6.4	6.0
PERCENT ABSORPTION	19.4	20.5	17.5	18.5	17.5

Net weight about 100 lb./cu.ft. Absorption limit about 17%

Madison, Wisconsin, April 2, 1929 Paul T. Porter Observer.

We reserve the right to publish the results of all tests made at this laboratory.
We withhold names of parties from publication if requested.

Note — The Wisconsin Building Code requirements are: 700 lb. per sq. inch strength and not over 12 per cent absorption.

THE UNIVERSITY OF WISCONSIN

COLLEGE OF ENGINEERING — DEPARTMENT OF MECHANICS — Sheet 3.

Laboratory for Testing Materials

Results of Tests on Pottsco Conc. Building Blocks. Size and Type 8x8x16-in., 3 cell.

Made for Economy Concrete Products Co. Address Wauwatosa, Wisconsin.

Samples selected by G. W. Porter, for WCPA

Scoring or facing None

Brands or Marks F in hex. stencilled on end, # scratched on end of #2.

Additional information Made Dec.7, 1928; aggregate, Pottsco; all through 1/2-in. screen; 1:9 mix; Ideal 21 cu.ft. batch mixer; 3 minutes dry, 3 minutes wet; Anchor stripper; cured 18 hours in steam.

These five blocks picked at random and subjected to 100 reversals of freezing and thawing, after which they were weighed for loss in weight and broken for strength in regular way. Absorption data is for blocks before freezing. See other part of report for loss in weight and absorption after freezing.

(B) COMPRESSION TEST DATA

Loaded on 8x16-in. faces, cells vertical. Bedded in #5 stucco.

Mark or Number	1	2	3	4	5
Seal Number WCPA	1265	1261	1265	1269	1275
Weight of Block (lb.)	36.6	35.0	37.4	36.5	36.9
Height (inches)	7.7	7.7	7.7	7.7	7.7
Dimensions of Loaded Cross Section (in.)	8.0x15.75	8.0x15.75	8.0x15.75	8.0x15.75	8.0x15.75
Area of Section (Sq. in.)	126.0	126.0	126.0	126.0	126.0
MAXIMUM LOAD (lb.)	138,850	82,750	148,850	134,000	114,150
ULTIMATE STRENGTH, (lb. per sq. in.)	1100	660	1180	1065	910
Color	Top of #2 built up with 1:1 Lumnite mortar before breaking.				
Character of Fracture	#2, complete shear, crumbly; #1, shear except one end;				
Remarks	others, shear one side; appearance OK except for #2.				

Date of Compression Test April 5 1929

(C) VOIDS TEST DATA

Mark or Number	1	2	3	4	5
Section Area (Sq. in.)	126.0	126.0	126.0	126.0	126.0
Number of Cells	3, circular ends; 2 end depressions, round ends.				
Cell Dimensions (in.)	3.1x5.2 (14.0)	same	same	same	same
End depressions	1.3x4.8 (5.5)	same	same	same	same
Cell Area (Sq. in.)	53.0	53.0	53.0	53.0	53.0
PERCENT VOIDS	42	42	42	42	42

(D) ABSORPTION TEST DATA (Weight in Pounds) Before Freezing.

Mark or Number	1	2	3	4	5
Weight after immersion in water 48 hr.	40.1	39.3	40.3	39.7	40.0
Weight, Dry Specimen	34.5	32.9	34.2	33.8	34.1
Gain in Weight	5.6	6.4	6.1	5.9	5.9
PERCENT ABSORPTION	16.9	19.5	17.8	17.6	17.3

Net weight about 100 lb./cu.ft. Absorption limit about 17%

Madison, Wisconsin, April 5, 1929 Paul T. Porter Observer.

We reserve the right to publish the results of all tests made at this laboratory.
We withhold names of parties from publication if requested.

Note — The Wisconsin Building Code requirements are: 700 lb. per sq. inch strength and not over 12 per cent absorption.

POTTSCO is the ideal aggregate for light-weight concrete, altogether aside from its low cost and remarkable workability. It contains 35% Calcium Oxide, 34% Silica, and 14% Aluminum Oxide. The sulphur content is very low—only 1.42% Sulphuric Anhydride—absolutely harmless in these proportions to any concrete.

IT is clean, sharp and of a hard crystal formation. It easily complies with government specifications calling for 400 pound compressive strength in the lean, light mix used for floor-fill and weighs less than 75 pounds per cubic foot. It will produce a high compressive strength—over 1,000 pounds per square inch with a 1 to 7 mix.

DO not confuse POTTSCO with low-grade slag granules made by the hot water or ordinary slag quenching process. Such slag will not give the compressive strength called for by government or other good engineering specifications.

POTTSCO is also ideal for back-up block, partition tile and the fire-proofing of structural steel. With a mix of 1:7 it will yield a compressive strength in tamped units of considerably over 1000 pounds to the square inch. It has a high insulation value with a heat loss of only .30 B.T.U.—equal to the best insulations on the market. The Riverbank Laboratories give POTTSCO a high rating as an acoustical material.

POTTSCO offers you savings in first cost and in labor of application, but more important still, it is the best material you can buy for the purpose.

THE POTTSCO CORPORATION
Number One North La Salle Street
'Phone STAte 1340
CHICAGO

REVISED REPORT

ROBERT W. HUNT COMPANY, ENGINEERS
CHICAGO PITTSBURGH NEW YORK
LONDON ST. LOUIS SAN FRANCISCO

ANALYSIS OF "POTTSCO"

Chicago, Illinois
November 10, 1930

FILE NO. 23932-2 ORDER B-20110
REPORT C-490-A

H.H. Potts Company
Builders Building
Chicago, Illinois

Gentlemen:

A Sample marked "Pottsco" was submitted by the H.H. Potts Company to our laboratory for chemical analysis:

Analysis Water Soluble:

% Total Solids.......... 0.040

% Chlorine.................. Trace
% Sulphate.................. Trace
% Sulphides................. Trace
Reaction.................. Neutral

Analysis of White Sample:

% Silica.................... 34.00
% Iron Oxide................ 4.95
% Aluminum Oxide............ 14.05
% Calcium Oxide............. 38.83
% Calcium Sulphide.......... 2.42 (Calculated from Sulphide Sulphur)
% Magnesium Oxide........... 3.24
% Loss on Ignition.......... Nil
% Sulphuric Anhydride....... 1.42

The water soluble analysis shows a very small percentage of soluble matter. The low percentage of water soluble as well as the neutral reaction indicates that the sample submitted would not cause corrosion when used as an aggregate for concrete in contact with reinforced steel.

A piece of polished steel showed no noticeable deterioration on being placed in boiling water containing portions of pulverized "Pottsco".

Respectfully submitted:
ROBERT W. HUNT COMPANY
C E Plummer
. Plummer
Technical Director,
Chemical & Metallurgical Engineering

ROBERT W. HUNT COMPANY, ENGINEERS
CHICAGO PITTSBURGH NEW YORK
LONDON ST. LOUIS SAN FRANCISCO

Chicago, Illinois,
August 31, 1928.

FILE NO 23932-1 ORDER B-3845
REPORT 26476

H. H. Potts Company,
Builders Building,
Chicago, Illinois.

Gentlemen:-

The following is result of heat test, authorized by your letter of August 25th, on two-8x8x16" building blocks, which were delivered to our laboratory by your representative.

The test performed was in the nature of a preliminary observation and no absolute temperature determinations were made.

Blocks under test were surrounded to a certain extent by other blocks in order to confine the heat as much as possible and were then subjected to an air blast gas flame for four hours.

The area in immediate contact with the flame came to a bright cherry red which is generally considered indicative of a temperature of about 1500 degrees Fahrenheit. The other face of the block was then not too hot to be touched by the hand.

While under these conditions the blocks were deluged with cold water. No cracking or spalling off of the blocks was apparent from the heat or from the cooling by water.

Respectfully submitted,
ROBERT W. HUNT COMPANY.

HSB:MB H S Bowen

FORM 8407

PITTSBURGH TESTING LABORATORY

PITTSBURGH, PENNA.

ESTABLISHED 1891

ORDER No. Ch-5823
CLIENT'S No.

LABORATORY No. 163521
FILE No. 6774.3
August 23, 1933.

REPORT

COMPRESSION AND FIRE TESTS OF POTTSCO CONCRETE

FOR

THE POTTSCO CORPORATION, 1 NORTH LA SALLE STREET, CHICAGO, ILLINOIS

PURPOSE OF TESTS

The foregoing types of test were conducted for the purpose of determining the modulus of elasticity in compression and ultimate compression strength of concrete made up of Pottsco concrete in varying proportions of Pottsco material.

The fire tests were made for determining the protection which Pottsco concrete, in the same varying amounts, would afford structural steel shapes embedded in same.

DESCRIPTION OF TEST SPECIMENS

COMPRESSION TEST SPECIMENS

For the compression test 6" x 12" specimens were cast in the presence of a Pittsburgh Testing Laboratory Inspector, three different mixes being selected and two cylinders of each mix prepared for test in the usual recognized manner covering this type of test specimen.

There were three different mixes used in the preparation of the cylinders, as follows:-

MIX NO. 1 - - - 1-8 By Volume

Cement-One Bag (94 Pounds)
Pottsco Aggregate - 8 Cu. Ft. (at 48 pounds per Cu. Ft.)
Water Added - 7 Gallons per bag

FORM 8407

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FILE No. 6774.3

REPORT

MIX NO. 2 - - - 1-6 By Volume

Cement-1.16 Bags (109 Pounds)
Pottsco Aggregate - 6.96 Cu. Ft. (at 48 pounds per Cu. Ft.)
Water Added - 7.76 Gallons per bag

MIX NO. 3 - - - 1-4 By Volume

Cement-One Bag (94 Pounds)
Pottsco Aggregate - 4 Cu. Ft. (at 48 pounds per Cu. Ft.)
Water Added - 5 gallons per bag

A sieve analysis of the Pottsco aggregate used in each of the foregoing mixes is as shown below:-

3/8"	0.0	Percent Retained
No. 4	1.5	" "
No. 8	7.5	" "
No. 14	37.0	" "
No. 20	60.0	" "
No. 28	78.0	" "
No. 48	94.0	" "
No. 80	96.0	" "
No. 100	97.0	" "
No. 100	3.0	Percent Passing

FIRE TEST SPECIMENS

The fire test specimens consisted of three blocks of Pottsco concrete each 10" x 10" x 14" on a side and representing the three different mixes as used in the preparation of the 6" x 12" cylinders tested for compression strength. These fire test specimens were cast around a 6" x 6" "H" column weighing 21 pounds per foot and embedded vertically in the center of the block, with respect to the long axis, the beam extending to within 2" of the upper and lower surface of the block and the ends of the steel beam protected by the concrete which was brought flush with the top and bottom face of the block.

FORM 8407

PITTSBURGH TESTING LABORATORY

PITTSBURGH, PENNA.

ESTABLISHED 1891

ORDER No. Ch-5823
CLIENT'S No.

LABORATORY No. 163521
FILE No. 6774.3

REPORT

The compression and fire test specimens were shipped to our laboratory where they were allowed to cure in open air at room temperature for a period of 28 days. At the expiration of the 28 day period the blocks were thoroughly dried out in a heating hood until they had reached a constant weight after which period they were immediately tested.

RESULTS

COMPRESSION STRENGTH TEST

Compression strength tests were made on each set of cylinders submitted, one of each mix being tested in the usual manner by crushing at the rate of .05" per minute and the ultimate strength determined. The mate to each cylinder was tested for modulus of elasticity as well as ultimate compression strength. It is mentioned that the crushing test was made on the same day as the companion fire test specimen was tested, one days time being required for each fire test, as will be described. Results of compression strength tests are as follows:-

COMPRESSION TEST OF 6" X 12" CYLINDERS USING POTTSCO AGGREGATE

CYLINDER NUMBER	CRUSHING LOAD POUNDS	CRUSHING LOAD LBS. PER SQ.IN.	AGE DAYS
1A	33,080	1170	42
1B*	32,300	1147	42
		1156 - Average	
2A*	47,400	1676	43
2B	44,500	1574	43
		1625 - Average	
3A*	51,000	1804	44
3B	72,900	2580	44
		2192 - Average	

* These cylinders used for the determination of Modulus of Elasticity.

FORM 8407

PITTSBURGH TESTING LABORATORY

PITTSBURGH, PENNA.

ESTABLISHED 1891

ORDER No. Ch-5823
CLIENT'S No.

LABORATORY No. 163521
FILE No. 6774.3

REPORT

MODULUS OF ELASTICITY OF CONCRETE

LOAD LBS. PER SQ.IN.	NO. 1	NO. 2	NO. 3
250	720,000	990,000	1,250,000
500	700,000	975,000	1,250,000
750	635,000	940,000	1,250,000
1000	525,000	860,000	1,240,000
1250		750,000	1,170,000
1500			1,060,000

METHOD OF CONDUCTING FIRE TEST

Each of the fire test specimens were, in turn, tested for fire resistance by placing them in a gas fired furnace and heating specimen in accordance with the recognized practice specified by the American Society for Testing Materials, the time temperature curve being followed, which curve covers fire tests for building materials.

Thermo-couples were placed at points indicated at the lower right hand portion of blue print diagrams, figures 1, 2 and 3, attached hereto, and the temperature recorded by means of a Potentiometer at frequent intervals during the tests.

By reference to these diagrams, it will be observed that the American Society for Testing Materials ideal curve is shown in dotted lines.

After placing each block, in turn, in the gas furnace with the thermo-couples welded to the steel at points 1 and 2 and embedded in the concrete at point 3 and properly insulated, the temperature was gradually raised in the furnace and controlled, so that it matched, as nearly as possible, the ideal curve as shown in A. S. T. M. Specifications C19-26T, which covers tentative specifications for fire tests of building construction and materials. It is mentioned that these specifications are similar to those which have been approved by

FORM 2407

PITTSBURGH TESTING LABORATORY

PITTSBURGH, PENNA.

ESTABLISHED 1881

ORDER No. Ch-5823
CLIENT'S NO.

LABORATORY No. 163521
FILE No. 6774.3

REPORT

the American Standards Association and which are followed generally in similar investigations.

Attached photograph, Plate "A", shows the appearance of blocks 1, 2 and 3 with insulated thermo-couple leads, prior to testing.

SUMMARY OF RESULTS

COMPRESSION TESTS

Results of compression tests indicate a unit compression strength ranging from an average of 1158 pounds for a 1-8 mix to 2192 pounds for a 1-4 mix, the strength of mix No. 2 averaging 1625 pounds or midway between that indicated for mixes 1-4 and 1-8.

The same relationship also holds good for modulus of elasticity values, the values ranking in the same order as the ultimate compression strength of each mix.

FIRE TESTS

Tests were discontinued when steel temperature reached 1000°F. in view of results made by the Bureau of Standards in load tests under heat of Gypsum protected columns. Results of these tests which appear in the Bureau of Standards, Journal of Research for June 1933 and indicate buckling when the temperature of the steel had reached 800°F. to 1200°F. From these results we considered that failure would have occurred at a flange temperature of 1000°F.

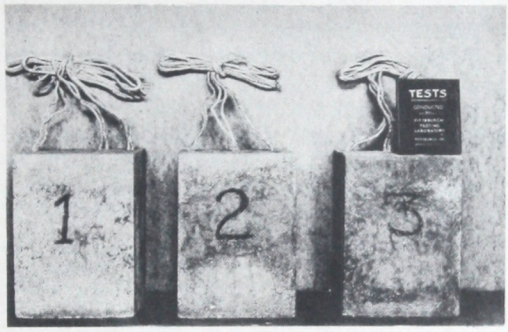


PLATE "A"
APPEARANCE OF BLOCKS BEFORE FIRE TEST.

CONCLUSIONS

The following conclusions may be drawn from the results of these tests:-

COMPRESSION STRENGTH TESTS

A. An average strength of 2200 pounds per sq. in. is indicated for Pottsco Concrete when mixed in the proportion of 1 part of cement to 4 parts of Pottsco by volume and using 7 gallons of water per sack of cement.

MODULUS OF ELASTICITY

A. The modulus of elasticity in compression of Pottsco when mixed in the proportion of 1 part of cement to 4 pards of Pottsco by volume and using 7 gallons of water per sack of cement, averages 1,250,000 pounds per sq. in. for working stresses up to 750 pounds per sq. in. This would give a value of "N" for engineering calculations of 1 to 24 where "N" is the ratio of modulus of elacticity of steel to concrete.

FIRE TESTS

A. The difference between the mixes in the fire test are not as marked as the variation in results obtained in the compression strength tests. The elapsed time for the temperature to reach 1000°F. at the flange of block No. 1, representing a 1-8 mix by volume, was not very much less than the time required for the flange of the "H" beam to reach the same temperature in block No. 3, the latter representing a 1-4 mix.

It would appear that if Pottsco Concrete is intended as a fire-protecting material only, that a 1-8 mix by volume would answer the purpose almost equally as well as the richer, 1-4 mix by volume.

On the other hand, however, we would recommend the Pottsco 1-4 mix by volume in case the concrete is to be used for load bearing purposes owing to its higher compressive strength and greater rigidity than the leaner mixes.

Respectfully submitted,

PITTSBURGH TESTING LABORATORY

J. W. Reifsnyder,
Engineer of Tests.

ACOUSTICAL

The accompanying report on sound transmission made by the Riverbank Laboratories, Geneva, Illinois, probably the outstanding authority on acoustics of building materials, while shown in technical form, interprets itself to establish that POTTSCO has high acoustical properties and POTTSCO light-weight concrete deserves full consideration of its merit wherever acoustical qualities are needed.

Riverbank Laboratories

Geneva, Ill.

Department of Acoustics

INFORMATION REPORT #115

Report on Sound Transmission Tests

POTTSCO Block Partition
for the
H. H. Potts Company

The partition was built in one of the openings of the Sound Chamber of the Riverbank Laboratories, of the 8x8x16" POTTSCO block, laid in lime and Portland cement mortar. The blocks were plastered on each side with a brown and finishing coat ½" thick, of gypsum plaster. The tests were conducted according to the standard Reverberation Method employed in this laboratory, and described in various published papers. The following table gives the logarithmic reduction factor for each of the 17 test tones employed

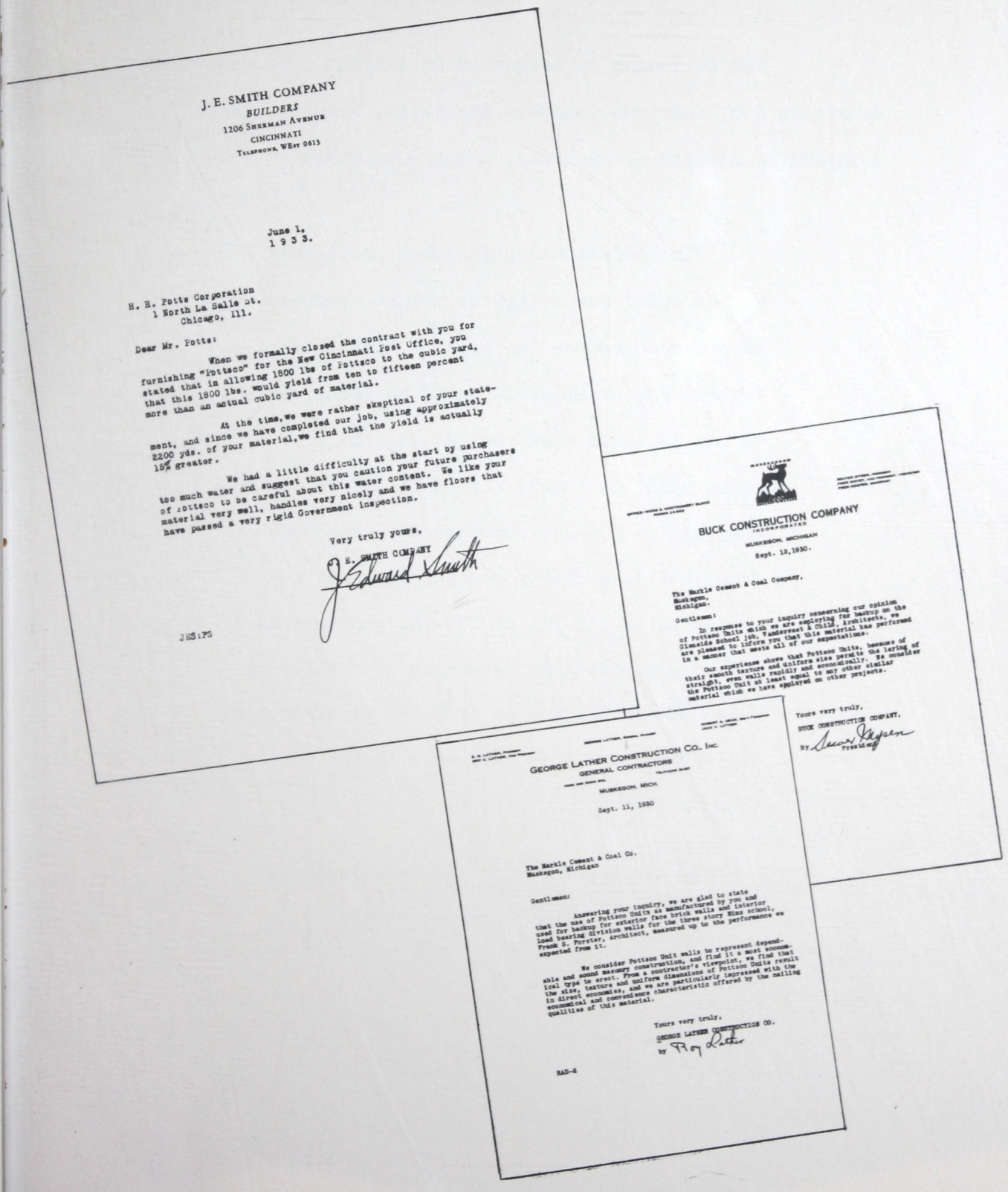
Tone	Frequency	Logarithmic Reduction Factor	Sensation Units
C_2	128	3.17	31.7
E_2	144	2.93	29.3
$F^{\#}_2$	180	3.11	31.1
$A^{\#}_2$	205	3.56	35.6
C_3	256	4.00	40.0
E_3	288	4.25	42.5
G_3	384	4.28	42.8
$A^{\#}_3$	456	4.72	47.2
C_4	512	5.27	52.7
$D^{\#}_4$	610	5.12	51.2
$F^{\#}_4$	723	5.27	52.7
$A^{\#}_4$	912	5.22	52.2
C_5	1024	5.60	56.0
$F^{\#}_5$	1448	5.17	51.7
C_6	2048	5.37	53.7
$F^{\#}_6$	2896	4.43	44.3
C_7	4096	6.20	62.0

The average reduction over the entire range of tones is 45.7 units. The weight of the finished construction was 56 pounds per square foot.

RIVERBANK LABORATORIES

TESTIMONIALS

The accompanying testimonials are representative of what all users of POTTSCO think about it



J. E. SMITH COMPANY
BUILDERS
1206 SHERMAN AVENUE
CINCINNATI
TELEPHONE, WEST 0613

June 1,
1933.

H. H. Potts Corporation
1 North La Salle St.
Chicago, Ill.

Dear Mr. Potts:

When we formally closed the contract with you for furnishing "Pottsco" for the New Cincinnati Post Office, you stated that in allowing 1800 lbs of Pottsco to the cubic yard, that this 1800 lbs. would yield from ten to fifteen percent more than an actual cubic yard of material.

At the time, we were rather skeptical of your statement, and since we have completed our job, using approximately 2200 yds. of your material, we find that the yield is actually 15% greater.

We had a little difficulty at the start by using too much water and suggest that you caution your future purchasers of Pottsco to be careful about this water content. We like your material very well, handles very nicely and we have floors that have passed a very rigid Government inspection.

Very truly yours,
J. E. SMITH COMPANY
J. Edward Smith

JES:FS

BUCK CONSTRUCTION COMPANY
INCORPORATED
MUSKEGON, MICHIGAN

Sept. 13, 1930.

The Marble Cement & Coal Company,
Muskegon,
Michigan.

Gentlemen:

In response to your inquiry concerning our opinion of Pottsco Units which we are employing for backup on the Olmsside School job, Vandervoet & Child, Architects, we are pleased to inform you that this material has performed in a manner that meets all of our expectations.

Our experience shows that Pottsco Units, because of their smooth texture and uniform size permits the laying of straight, even walls rapidly and economically. We consider the Pottsco Unit at least equal to any other similar material which we have employed on other projects.

Yours very truly,
BUCK CONSTRUCTION COMPANY,
By Lewis Hyden
President

GEORGE LATHER CONSTRUCTION CO. Inc
GENERAL CONTRACTORS
MUSKEGON, MICH.

Sept. 11, 1930

The Marble Cement & Coal Co.
Muskegon, Michigan

Gentlemen:

Answering your inquiry, we are glad to state that the use of Pottsco Units as manufactured by you and used for backup for exterior face brick walls and interior load bearing division walls for the three story Sims school, Frank S. Forster, Architect, measured up to the performance we expected from it.

We consider Pottsco Unit walls to represent dependable and sound masonry construction, and find it a most economical type to erect. From a contractor's viewpoint, we find that the size, texture and uniform dimensions of Pottsco Units result in direct economies, and we are particularly impressed with the economical and convenient characteristic offered by the nailing qualities of this material.

Yours very truly,
GEORGE LATHER CONSTRUCTION CO.
by Roy Lather

RAD-4

ECONOMY OF STRUCTURAL LIGHT-WEIGHT CONCRETE

The following quotation is an extract from report of Committee 406, American Concrete Institute, Frank A. Randall, outstanding structural engineer, Author-Chairman:

> "The additional price that profitably may be spent for a lighter weight concrete in order to reduce the cost of structural frame. For example, it would be worth while to pay 10 cents more per cu. ft. (2.70 a cubic yard) to secure a reduction from 150-lb. concrete to 130-lb. concrete in a concrete frame building thirty stories high and a reduction to 115-lb. or 100-lb. concrete in a five story building, depending on whether the floor was of solid slab or joist construction. The savings are more favorable in the steel frame building.
>
> We are hopeful that the data developed will prove of value."

PHONES { MONROE 6700
SHELDRAKE 4080

E. A. RANDALL
STRUCTURAL ENGINEER
1300 W. JACKSON BLVD.
CHICAGO

MEMBER
WESTERN SOCIETY OF ENGINEERS

October 10, 1933

THE POTTSCO CORPORATION,
1 North LaSalle Street,
Chicago, Illinois.

Attention: Mr. E. A. Magorn

Dear Mr. Magorn:

In reply to your inquiry, I am pleased to give you my opinion of the possible market of light weight concrete aggregates generally and your material POTTSCO perticularly.

My experience in the light weight aggregate field from an engineer's standpoint has convinced me of the economic advantages gained by their use.

I have recently been engaged in the design of several buildings - one of skyscraper type - using light weight aggregates. These designs were made after a complete study of various aggregates and the advantages of light weights definitely proven. These advantages have been proven conclusively and now are generally accepted by Architects and Engineers.

POTTSCO, in my opinion, has a wide and diversified market. This market or field may be logically divided into four divisions, each based upon its use or purpose.

The first and largest of these divisions is light weight floor and roof fill. An immediate demand of large proportions is brought about by the present $3,300,000,000 Government building program, which will involve many thousands of cubic yards. POTTSCO satisfies the Government specifications for floor fill in post offices, court houses and other buildings of similar nature.

The second division embodies the precast building blocks and partition unit industry. This industry has been established for many years and uses large quantities of concrete materials. POTTSCO, because of its light weight, quality and low cost should qualify for a large percentage of this business.

The third division includes the precast concrete roof slab industry. A conservative estimate of the average quantity of aggregates used in this industry annually for the past ten years is 200,000 cubic yards. This quantity is calculated from data given in reports on construction by the Department of Commerce, Washington, D. C. and includes only those states

E. A. RANDALL
STRUCTURAL ENGINEER
1300 W. JACKSON BLVD.
CHICAGO

MEMBER
WESTERN SOCIETY OF ENGINEERS

into which POTTSCO can be shipped with a price advantage over competitive materials.

The fourth division, although now the smallest, should become much greater as precast advantages become still more generally known among Architects and Engineers. This division covers the manufacturing of light weight precast units for fireproofing structural steel in the skyscraper type of buildings. No accurate data is available which may be used in calculating possible quantities in this division.

Yours very truly,

E. A. Randall

E. A. RANDALL

EAR:S

What Light-Weight Concrete Means in Dollars and Tonnage

Saving in Steel Alone Ranges from 10 to 20 Per Cent—Some Facts Established from Actual Experience—Adding Stories to Existing Buildings

FOR many years the desire for lighter dead weight in superstructures of buildings found expression in the development and use of light-weight building units in partitions, in wall back-up, and for fireproofing purposes. In these fields cinder concrete units have played an ever-increasing part; and monolithic cinder concrete likewise was found useful in the development of lighter floor construction.

Light-Weight Manufactured Aggregates

With the advent of manufactured aggregates capable of producing light-weight concrete of high structural strength and suitable for all purposes, the possibilities for economy were greatly increased. These new materials, producing a high quality of structural concrete weighing around 100 lb. per cu. ft., and still lighter when intended for wall and partition units, made it possible to extend the lighter weight into the great mass of monolithic concrete in structures.

Great Saving in Steel Tonnage

Designers know that this substantial reduction in the weight of monolithic concrete will be accompanied by an appreciable reduction in steel tonnage, whether one is considering the reinforcing steel in a reinforced concrete structure, or the structural steel in buildings that are fireproofed with concrete.

The designer's problem, then, becomes that of balancing the saving in steel tonnage and foundation costs against the greater cost of the light-weight aggregate. Obviously, the net saving increases as the cost of the manufactured aggregate approaches the cost of ordinary aggregates. Yet many designers who have not thoroughly investigated the problem will be surprised at the saving that is possible even when the cost of the light-weight aggregate is considerably higher than the cost of natural aggregates. A few actual instances will illustrate this important fact.

What the Actual Figures Tell

In an article by E. B. White, in the June (1931) issue of CONCRETE, reference is made to the saving resulting from the use of sand-haydite concrete weighing 108 lb. per cu. ft. instead of sand-stone concrete weighing 144 lb. per cu. ft., in the design and construction of the Victor Lawson Memorial Y. M. C. A. Building, in Chicago, in 1930-1931. This building is 104 by 139 ft. in plan for a height of 18 stories, above which there is a 6-story tower of smaller area. The building has a structural steel frame fireproofed with concrete and the floor construction is of reinforced concrete. The floor area is about 280,000 sq. ft. Following is a comparison of the quantities of material involved in the two designs prepared:

(1) The structural steel tonnage was reduced from 2,690 to 2,440, a total saving of 250 tons, or 9.3 per cent.

(2) The tonnage of reinforcing steel was reduced from 650 to 570, a total saving of 80 tons, or 12.3 per cent.

(3) The number of foundation piles was reduced from 1,650 to 1,417, a saving of 233 piles, or 14.1 per cent.

(4) The quantity of concrete was reduced from 6,300 cu. yd. to 6,000 cu. yd., but the cost of the sand-haydite concrete was the greater because of the much greater cost of the light-weight aggregate, which was figured at $5.75 per cu. yd. compared with $1.65 for crushed stone. Had the price of the manufactured aggregate approached more closely the price of crushed stone, the actual saving of $12,580 would have been much greater. The important lesson to be learned from this case, however, is that even with a high price for light-weight aggregate a saving was still possible.

(5) The total saving in dead weight was 7,000,000 lb.

Big Saving on Tall Building

Another case is that of a 47-story building constructed in Chicago in 1928. The building is 100 by 175 ft. in plan to a height of 22 stories, above which an occupied tower extends 25 stories more. The building has a structural steel frame fireproofed with concrete, and floors of reinforced concrete. To obtain a definite basis of comparison, a well known firm of structural engineers prepared two complete sets of plans, one based on the use of ordinary stone or gravel concrete weighing 144 lb. per cu. ft., and the other based on using both fine and coarse haydite as the aggregate, producing concrete weighing 100 lb. per cu. ft. From the comparative designs the following facts were obtained:

(1) The structural steel tonnage was reduced from 7,050 to 6,015, a saving of 1,035 tons, or 14.7 per cent. The saving on this item alone would have been more than enough to pay for the light-weight aggregate at the estimated price of $6.00 per cu. yd.

(2) The quantity of reinforcing steel in the floor slabs was reduced from 1,360 to 1,020 tons, a saving of 25 per cent.

(3) An estimated saving of $25,000 resulted from the smaller required diameter of the cylindrical caisson piers that extend to bedrock about 100 ft. below the street level.

(4) The actual reduction in dead weight above the 50 basement columns amounted to 15,000,000 lb., or 300,000 lb. per column.

At the time this structure was built, the idea of using light-weight aggregate on so large a scale was somewhat new in Chicago, as the result of which ordinary concrete was used. Nevertheless, the figures tell a convincing story.

Randall Committee Investigation

One of the most exhaustive investigations thus far made, on the economic value of light-weight concrete, was that conducted by Committee 406 of the American Concrete Institute, under the chairmanship of Frank A. Randall, consulting structural engineer, Chicago. The full report of the committee will be found in the March (1931) issue of the *Journal* of the American Concrete Institute.

Through the preparation of complete designs and esti-

mates the Randall committee was enabled to make a definite comparison over a wide range. Designs and estimates covered six heights, including 5, 10, 15, 20, 25 and 30 stories, one set of plans having utilized reinforced concrete frames and the other structural steel frames fireproofed with concrete. Various weights of concrete were considered, namely, 150, 125, 100, 75 and 50 lb. per cu. ft. The cost of the superstructure concrete was figured at 30, 40 and 50 cents per cu. ft. The design was based on the proposed new building code for Chicago, which is closely in line with the working stresses recommended by the American Concrete Institute and the American Institute of Steel Construction.

Facts Established by Randall Committee

Inasmuch as light-weight aggregates suitable for high-strength structural concrete now commercially available produce concrete weighing around 100 lb. per cu. ft., and since designers usually figure the weight of ordinary concrete at 150 lb. per cu. ft., the estimates determined by the Randall committee for these two weights will be given in the paragraphs that follow:

Reinforced Concrete Building. (a) In reinforced concrete buildings with [illegible]

[illegible]

Each Building an Individual Problem

The designs and estimates prepared by the Randall committee, as well as the two previous instances mentioned in this article, show that each building constitutes an individual problem. Nevertheless, the figures indicate that the use of 100-lb. concrete instead of ordinary 150-lb. concrete will mean a reduction in the tonnage of steel from 10 to 20 per cent [illegible] to build for both the reinforcing steel and [illegible]

Figures are available on bridges, but it is [illegible] reinforced concrete with the percentage [illegible] tonnage would be even greater than [illegible]

Adding Stories to Existing Buildings

It often happens that in a city whose building regulations have been modernized in comparatively recent years, older buildings that were built under older and very conservative regulations can be increased in height under newer regulations. In fact, this form of plant exten-

sion is likely to appeal to commercial and industrial concerns for the next few years, and it is a field that might well be cultivated by architects and engineers.

A recent illustration is that of the addition of a fifth story to the old 4-story building occupied by the Rapid Roller Company,* in Chicago. The original building, a concrete-fireproofed steel frame structure, was erected under the provisions of more conservative building regulations than those now in force in Chicago. Examination of the old plans disclosed that under present regulations some further weight could be added. If ordinary concrete had been used, however, the weight of an additional story would have been greater than the present building regulations could allow. By using Waylite, a light-weight processed slag aggregate, for both the fine and coarse aggregate in the monolithic concrete and in the precast concrete roofing slabs, it was possible to add the extra story. The monolithic concrete weighed 103 lb. per cu. ft. and that in the precast roofing slabs weighed 97 lb. per cu. ft. Here, then, was a case where the choice lay between using light-weight concrete or not building the addition at all.

More Stories Added

Another interesting illustration is that of the Chicago Screw Company building, to which four extra stories were added.† This is a flat-slab reinforced concrete building. Originally it was designed as a 4-story building carrying a live load of 250 lb. per sq. ft. At first only 2 stories were built, and in 1929 the company decided to add the remaining stories. In the meantime the company officials had reached the conclusion that a live load of 150 lb. per sq. ft. (instead of 250 lb.) would be ample for their requirements on the upper floors. Examination of the original plans followed, with the view of determining if 3 stories might be added as a result of the reduced live load. Figuring on ordinary concrete, however, that could not be done. It was then disclosed that through the use of haydite concrete weighing 115 lb. per cu. ft., and figuring on the reduced live load, 4 stories instead of 3 stories could be added. The 4 stories were added, and the completed building is now a 6-story structure.

To Play a Greater Part

Now that light-weight aggregates suitable for high-strength structural concrete are available over a considerable section of the country, it is reasonable to believe that light-weight structural concrete and light-weight concrete products will play an increasingly important part in building construction and in miscellaneous concrete products.

*See CONCRETE, October, 1932, page 10, for descriptive article.

†See CONCRETE, March, 1930, pages 13-14, for detailed illustrated [illegible]

Purdue Road School and Show at Lafayette in January

The nineteenth annual Purdue road school will be held at Purdue University, Lafayette, Ind., beginning January 23 and continuing through the 27th. A two-day road show will form part of the program.

The school will be held under the direction of the Engineering Extension Department and the School of Civil Engineering, with the County Surveyors Association, the Indiana County Highway Superintendents Association, the Indiana State Highway Commission, and the Highway Material [illegible]

A Publication **Concrete** Devoted to

CONCRETE CONSTRUCTION
AND CEMENT MANUFACTURE

400 WEST MADISON STREET
CHICAGO, ILLINOIS

October 9 1933

The Pottsco Coryoration
One North La Salle Street
Chicago Illinois

Gentlemen:

Permit me to bring to your attention three articles appearing in recent issues of CONCRETE, all of which should be of interest to you as a producer of light-weight concrete aggregate. In the October issue, the article beginning on page 5 will interest you. The September issue contains two articles with which you are even more directly concerned. One of these includes the new A.S.T.M. specification for light-weight aggregate, while the other, entitled "Blast-Furnace Slag Accepted as Concrete Aggregate," mentions numerous national societies who have accepted this aggregate after full investigation.

Based on the writer's study of the cement industry, the concrete construction field, and the building industry, in my editorial capacity, I am profoundly convinced that there is an expanding and most important market for light-weight concrete. I have held this belief for six or eight years and have seen it confirmed by developments which have already taken place and are now taking place.

Architects and engineers are becoming more keenly conscious every year of the advantages of dead-load savings in the structures they design. I predict that the day is not far distant when practically all our steel frame buildings of any considerable height will be fireproofed with light-weight concrete. This is based on findings of the American Concrete Institute and also on the economic law of efficiency and saving.

In addition to the articles mentioned above, I have published in our magazine numerous articles on light-weight concrete and its uses, and also on the use of light-weight aggregates similar to yours. In making these concretes, my studies have convinced me that there could scarcely be an aggregate more naturally suited to the making of light-weight concrete than granulated slag.

There is absolutely nothing in your aggregate, according to its chemical analysis, which would injure or corrode steel or other building

The Pottsco Coryoration October 9, 1933

material, and its chemical affinity for portland cement is noticeable. In fact, if POTTSCO were ground to the fineness of cement and kept perfectly dry, it should, when mixed with water, have cementing value quite analogous to that of portland cement itself.

Light-weight concretes are useful for many different kinds of precast masonry and tile products, such as back-up block, partition tile, floor and roof slabs, as well as floor fill, roof fill, nailing concrete, etc., and there is also, I believe, a considerable field for your product in bascule bridges, in the manufacturing of burial vaults, laundry trays, garbage containers, lawn furniture, acoustical slabs and many other uses yet to be developed. The acoustical properties of aggregate such as yours are of noticeable excellence, and its insulating values are particularly high. I predict for your product a constantly expanding market, particularly as I understand that your low cost of production and your low commodity freight rates enable you to compete, on more than equal terms, with other light-weight aggregates.

Yours very truly,

Norman M. Stineman

NMS
b

Norman M. Stineman Editor
C O N C R E T E

ADVANTAGES OF LIGHT-WEIGHT AGGREGATE

The following reproduction is the result of an exhaustive investigation made by Mr. H. Herbert Hughes of Washington,D. C. regarding light-weight aggregates, which analysis speaks for itself insofar as POTTSCO light-weight aggregate is concerned.

THE AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

Technical Publication No. 405

Class H, Nonmetallic Minerals, No. 17

Scope of the Light-weight Aggregates Industry

By H. Herbert Hughes

WASHINGTON, D. C.

DISCUSSION OF THIS PAPER IS INVITED. It should preferably be presented in person at the New York Meeting, February, 1931, when an abstract of the paper will be presented. If this is impossible, discussion in writing may be sent to the Editor, American Institute of Mining and Metallurgical Engineers, 29 West 39th Street, New York, N. Y., for presentation by the Secretary or other representative of the author. Unless special arrangement is made, the discussion of this paper will close April 1, 1931. Any discussion offered thereafter should preferably be in the form of a new paper.

29 WEST 39th STREET
NEW YORK, N. Y.

All papers issued by the Institute are abstracted month by month in Mining and Metallurgy. This paper is issued with the February, 1931, number. Members are urged to go through the abstracts each month and select and request such papers as they can use.

Pottsco

Water-cooled granulated slag has attracted attention as light-we aggregate for several years, particularly for use in masonry build units. No extensive utilization of the material has ever been ma however, because of its soft friable nature and its low crushing streng The H. H. Potts Co. has overcome these objectionable features by special cooling process. The product, Pottsco, was first marketed in t Chicago district in August, 1928.

The Pottsco manufacturing process is completed within the ste mill, using slag from selected furnaces. Patents covering its manu facture are pending and no details regarding the process are yet available Regulated temperature of the water during cooling appears to be the important feature.

Pottsco aggregate weighs about 1500 to 1600 lb. per cubic yard, a liberal moisture allowance bringing the shipping weight to 1800 lb. One commercial grade is produced, the size of the particles ranging approximately from 4 per cent. retained on 8 mesh to 98 per cent. retained on 100 mesh, giving a fineness modulus of 2.85. At present Pottsco is being used almost entirely for precast masonry units. Tests have been made, however, covering its use in poured concrete, particularly for floor sill and roofing, but the company has not actively promoted its sale for these purposes.

Pottsco masonry is recommended for all types of construction requiring back-up or partition units, its insulating properties being especially stressed. The aggregate has been available only since 1928, but its reception in the building trade shows that it occupies an important position in the light-weight field.

The plant supplying Pottsco to the Chicago district is at Indian Harbor, Ind., and from there the material is shipped to the concrete products plants that manufacture Pottsco units. Most of these plants lie within a 300-mile radius of Chicago. The maximum capacity of the Indian Harbor plant is 750 tons per day. A second plant for production of Pottsco was opened in Pittsburgh, Pa., in September, 1930. Its maximum output is 1000 tons daily, but distribution in this area is still in its infancy. Fig. 1 shows the location of these two plants as well as districts of appreciable consumption of Pottsco. Each one of these districts, with a few exceptions, also represents the location of a plant manufacturing Pottsco units.

Pottsco production has increased steadily since 1928 and it is reasonable to assume that the increase will continue. Ultimate Pottsco production, however, will be confined to those areas where suitable slag is available. Buffalo, Youngstown, Cleveland, and especially Birmingham, are logical locations for future plants although the slag produced in the minor iron and steel manufacturing districts also may be utilized. Expansion of Pottsco production, particularly for building units, will not only increase the field of light-weight aggregates but also will aid the iron and steel industry in profitable utilization of by-product slag.

COMPARATIVE COST OF POTTSCO BUILDING UNITS IN THE WALL WITH HOLLOW TILE IN THE WALL

What Is a Fair Market Price for Light-Weight Units?

A Careful Analysis of All Factors Affecting the Sales Figure

By H. H. POTTS

IN a consideration of light-weight concrete units, two topics for thought come immediately to mind: the potential market, and the price at which the products can be sold.

The potential market for light-weight concrete units comprises every masonry structure where clay tile, common brick or gypsum tile are ordinarily used.

The fair market price for such units should be expected to be true cost plus a reasonable profit; but more logically, a fair price for a concrete unit is the actual value it delivers when compared with competitive construction materials.

Practically all load-bearing and non-load-bearing exterior walls employ common brick, clay tile or concrete units for backup material. The cost of a wall built of solid brick is about twice the cost of the same type of wall built of hollow clay tile or light-weight concrete units, with the result that solid brick construction is limited to relatively few buildings. In fact, solid brick masonry walls when used today owe their specification to the particular job where cost is not a major objective, where the structure contains many window openings and thus requires but a small volume of masonry, or where preferential building code restrictions exist in a particular locality.

Ordinary clay tile for backup has enjoyed the advantage of being the first material on the market to demonstrate the marked economy that can be effected by substituting a larger, hollow unit for the smaller solid brick unit. The trend of the past twenty years has been toward the almost universal use of hollow clay units for backup. Since the advent of light-weight concrete units about ten years ago, concrete units have shared in this trend and today they occupy an important place in the backup unit field. Because clay tile led the building industry toward the use of hollow units for backup, that material still holds the major volume position in that class of wall construction.

Light-weight concrete units, as typified by those manufactured of Pottsco, Haydite and cinder aggregates, are making marked progress in the backup unit field. This progress is evidenced by the increasing number of architects who specify light-weight concrete units and clay tile units on the same basis, giving the contractor his option to purchase either one, and by an increasing number of specifications calling for alternate proposals for concrete or clay tile units where one or the other is specified in the base bid.

The result is that clay tile and light-weight concrete units are in direct competition on jobs comprising the major market volume of construction. It is therefore necessary that the cost of light-weight concrete unit walls be in line with the cost of clay tile walls.

Informed men in the industry know, and know why, a masonry wall built of light-weight concrete units is a better wall than one built of clay tile. In some cases owners and their architects appreciate the superior qualities of this type of concrete masonry construction and will pay more to obtain it; nevertheless, if concrete is to occupy a commanding position in the masonry backup field, it is essential that it be sold on a price basis that will compete with the cost of clay tile walls.

The next step to consider is, what are comparative costs of similar walls built of clay tile units, and of light-weight concrete units?

Costs for the several materials that enter a masonry wall will vary according to market location. Masonry labor cost and efficiency will also vary; however, the figures given below represent average conditions and are sufficiently accurate for comparative purposes. (All figures are based on walls 8 in. thick.)

Price Is Not the Only Consideration

This table shows equivalent wall volume values for hollow clay tile and light-weight concrete masonry walls, 8-in. thick. For example, if 5x8x12-in. clay tile are delivered to building site at a price of $65 per M, 8x8x16-in light-weight concrete units are worth $170 per M, delivered.

On an even wall cost basis the use of any light-weight concrete unit offers many advantages to the owner, his architect and the contractor. The owner obtains a building, the walls of which have superior heat and sound insulating properties and substantially better fire resistance characteristics. The contractor effects marked economy because of the nailing, cutting and plaster economies made possible with these units. Another important consideration is that owner, architect and contractor contribute to the support and development of local industry and they have direct contact with the owners of the producing plant.

The sum total for these advantages offers an incentive for all parties interested in design, construction and ownership to make a prompt decision in favor of concrete masonry, provided the cost of concrete masonry is no higher than for clay tile. The result is low selling cost. In the event that concrete masonry costs more than clay tile masonry, the same advantages must be stressed to justify the added cost, with the result that selling costs are greatly increased.

Throughout the central states, delivered prices for 5x8x12-in. clay tile (this size is most common for backup) range between $60 and $70 per thousand. Reference to the comparative table shows that the equivalent in concrete units is a price range between $160 and $180 per thousand.

Assuming an average delivered price of $65 per thousand for clay tile; a fair price for 8x8x16-in. light-weight concrete units is $170 per thousand or 17 cts. each, delivered to the building site.

Establishing a delivered unit price of 17 cts. for an 8x8x16-in. light-weight concrete unit as a level that meets average clay tile competition immediately presents another most important question, i. e.: Can a concrete products manufacturer produce 8-in. units to sell at 17 cts. and make a profit? It is also necessary to inquire whether costs of manufacture will provide any leeway in the event clay tile prices are lower than $65.

Like all other manufactured commodities, the cost of producing and marketing concrete units is subdivided into costs of raw materials, labor, selling, distribution and overhead. Because of certain definite characteristics true of the concrete products industry, a considerable proportion of production cost is governed by the cost of raw materials and regardless of volume produced, within reasonable limits, costs per unit are substantially the same. Volume has a marked effect, however, on indirect costs and has an important bearing on profit.

One outstanding feature that should be foremost in the minds of concrete products manufacturers is the encouraging fact that the production of light-weight units is in *addition* to the normal volume of ordinary units. The same plant and equipment are used for both, effecting overhead cost savings that amount to as much as 50%. For example, assume a plant with an annual production of 250,000 8-in. heavy concrete units; through the sale of light-weight units, an additional volume of 250,000 units is obtained. Total volume then becomes 500,000 units without any increase in fixed charges, such as taxes, depreciation, insurance, office salaries, etc. Fixed charges are automatically cut in two. Other economies are realized because the added volume permits of better plant organization, reducing labor costs and adding to profits.

As previously stated, the cost of raw materials, cement and aggregate, represents a substantial proportion of total production cost. In as much as the cost of cement is relatively constant in a given market, the cost of aggregate assumes major importance. Because of the relatively high percentage of total cost represented by cement and aggregate, we will first consider the other items of cost in an effort to determine the maximum permissible cost that can be allowed for cement and aggregate. We will reverse the ordinary procedure of estimating manufacturing costs by giving first consideration to the most important element—*profit*.

We will assume that a net profit of 2 cts. per 8x8x16-in. unit or equivalent is equitable from the standpoint of invested capital and consistent with the nature of the commodity and prevailing competitive conditions. Other estimated costs listed are based upon the experience of the writer gained from plant operation and through contact with widely distributed plant operators. It is expected that individual plant operators interested in this subject will substitute figures for each item that will reflect costs based upon their particular set of conditions, arriving at a result that will accomplish the objective of this article, i. e.: "Can you make a profit manufacturing light-weight units?"

FACTORS INVOLVED IN ESTABLISHING THE SELLING PRICE OF LIGHT-WEIGHT CONCRETE UNITS

	Allowance per 8x8x16-in. unit
Profit	2 cts.
Discount, 5% of 17 cts.	.85
Delivery expense	1.75
General overhead expense	1 ct.
Sales expense	1 ct. 2
Operating labor expense	1.75
General plant expense, power, repairs, etc.	1
Total, not including cement and aggregate	9.35 cts.
Allowance for cement and aggregate	7.65
Selling price per 8x8x16-in. unit	17 cts.

According to this basis of estimated costs, it is profitable to sell 8x8x16-in. units on the basis of 17 cts. per unit, delivered, less 5% cash discount—provided combined cement and aggregate cost does not exceed 7.65 cts. per unit. Cement cost will generally vary between 2 and 3.25 cts., leaving a balance for aggregate cost ranging from 4.4 to 5.65 cts. per 8 in. unit.

Certain characteristics, other than cost, of the three light-weight aggregates now on the market have an influence on the cost of manufacturing and on the characteristics of the resulting concrete unit. The particular advantages claimed for each aggregate must rest with their respective sponsors and it is for the individual manufacturer to select the one that is availa : and best suited to his own viewpoint. Progressive manufacturers are successfully employing each aggregate to the advancement of the industry.

An especial appeal is directed to all progressive concrete products manufacturers to encourage each to manufacture some type of light-weight concrete unit adapted to above-grade construction. The future of the industry rests upon the aggressive pursuit of such a course.

COST OF LABOR AND MORTAR PER THOUSAND

Mason labor, 8x8x16-in. concrete units, per M	$70.00
Mason labor, 5x8x12-in. clay tile, per M	50.00
Mortar, concrete units (3 cu. ft. per 100 sq. ft.) per M	9.50
Mortar, clay tile (6 cu. ft. per 100 sq. ft.) per M	9.50
Number of 8x8x16-in. units required per sq. ft. of wall	1.1
Number of 5x8x12-in. units required per sq. ft. of wall	2.2

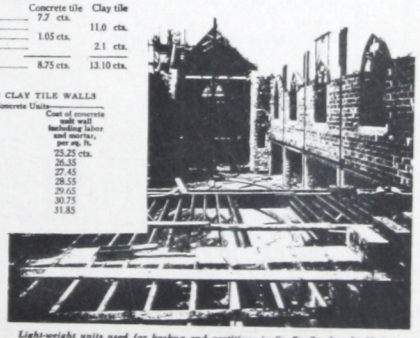
COST OF LABOR AND MORTAR PER SQ. FT.—4 IN. WALL

	Concrete tile	Clay tile
Labor, 1.1 concrete units @ 7 cts.	7.7 cts.	
Labor, 2.2 clay units @ 5 cts.		11.0 cts.
Mortar, 1.1 units @ .0095	1.05 cts.	
Mortar, 2.2 units @ .0095		2.1 cts.
Total labor and mortar cost per sq. ft.	8.75 cts.	13.10 cts.

Saving in favor of concrete units, 4.35 cts. per sq. ft.

COMPARATIVE COST OF 8-IN. CONCRETE UNIT AND CLAY TILE WALLS

Clay Units		Concrete Units	
Selling price hollow clay tile (5x8x12) 2.2 units per sq. ft.	Cost of clay tile wall, including labor and mortar per sq. ft.	Selling price concrete units 8x8x16-in. 1.1 units per sq. ft.	Cost of concrete unit wall including labor and mortar, per sq. ft.
$55.00	25.20 cts.	$150.00	25.25 cts.
60.00	26.30	160.00	26.35
65.00	27.40	170.00	27.45
70.00	28.50	180.00	28.55
75.00	29.60	190.00	29.65
80.00	30.70	200.00	30.75
85.00	31.80	210.00	31.85



Light-weight units used for backup and partitions in St. Paul's church, Sheboygan, Wis. F. A. Steubenrauch, architect, Sheboygan; F. G. Bartell, general contractor, St. Cloud, Wis. Units made by Economy Concrete Products Co., Milwaukee

In addition to actual lower wall costs, the added qualities of POTTSCO walls in the form of insulation, acoustics, nailing, direct plaster base, etc. are decidedly apparent.

Data on these features appear elsewhere in this booklet.

An attempt was made in the accompanying article to set up on the basis of 1930 prices, a ready and quick comparison of the cost of POTTSCO walls with hollow tile walls.

The theory of the calculations is adjustable to the basis of prevailing prices governing both products.

Because of the design and size of POTTSCO building units displacing smaller units of other products; the ECONOMY of POTTSCO walls is reflected in labor and mortar especially.

ADVERTISING

THE POTTSCO CORPORATION attempts to assist manufacturers, dealers, and others in building and maintaining the prestige of POTTSCO at all times, by an advertising campaign through representative and proper mediums.

Below is reproduced specimens of advertisements taken at random which have appeared from time to time.

POTTSCO
LIGHT WEIGHT AGGREGATE

Architects and Engineers are specifying a proven product in POTTSCO because it has given complete satisfaction on many important buildings including several of the largest Post Offices in the United States. POTTSCO combines light weight with compressive strength and load bearing value.

POTTSCO Light-Weight Aggregate

Contractors like POTTSCO because of its easy workability, greater yield, labor saving, low first cost and uniform results at all temperatures.

Has many uses: Floorfill, Roof Slabs, Nailing Concrete, Fireproofing, Back-up Tile, Partition Tile, Roofing Tile, Cast Stone.

POTTSCO fulfills every requirement as shown by laboratory tests and actual field work—

High Insulating Value
Great Compressive Strength
Tested Acoustical Value
Smooth Workability
Uniformity at all Temperatures
No Segregation in Mixing

Shipments from either Chicago or Pittsburgh at low freight rates, in quantities from a carload up. Any desired shipping schedules can be met.

Send today for sample and test data from leading laboratories. Block plant manufacturers, write for details of franchise offer.

THE POTTSCO CORPORATION
One North La Salle Street — Chicago, Illinois

POTTSCO
IS CHEMICALLY INERT

POTTSCO contains no soluble sulphur and less sulphuric anhydride than Portland cement itself. In fact, a chemical analysis of POTTSCO parallels a similar analysis of Portland cement.

A report of test on POTTSCO by the R. W. Hunt Company proves that it contains no ingredients which can in any way injure steel or other building materials. A paragraph in the Hunt report reads as follows:

"The low percentage of water soluble, as well as the natural reaction, indicates that the samples submitted would not cause corrosion when used as an aggregate for concrete in contact with reinforcing steel."

The report states further:

"A piece of polished steel showed no noticeable deterioration on being placed in boiling water containing portions of pulverized POTTSCO."

Parallels Portland Cement

A LEADING BRAND OF PORTLAND CEMENT		POTTSCO	
Silicic Dioxide	21.17%	Silica	34.80%
Aluminum Oxide	6.78	Aluminum Oxide	14.40
Ferrous Oxide	1.87	Ferrous Oxide	4.81
Calcium Oxide	64.27	Calcium Oxide	30.41
Magnesium Oxide	1.34	Calcium Sulphide	5.42
Manganese Oxide	.52	(Calculated from Sulphide Sulphur)	
Sulphuric Anhydride	1.34	Magnesium Oxide	2.42
Loss on Ignition	.80	Manganese Oxide	0.00
		Sulphuric Anhydride	1.42
		Loss on Ignition	.80

POTTSCO Light-Weight Aggregate

Uses

POTTSCO is being used for monolithic light weight concrete on some of the largest and most important buildings for the U. S. Government.

Equally good for moulded units—block or tile

Light in Weight
Cellular Yet Hard and Crystalline
High in Compressive Strength

Send for new folder just off the press, bearing the title—"Want to Save Money?"

The POTTSCO Corporation
1 North La Salle St. — Chicago

POTTSCO
A Proven Product at a New Low Cost

Architects, engineers and contractors are specifying and using POTTSCO today because it is a tested product and has given complete satisfaction on numerous important buildings, including some of the largest post offices in the United States.

Every quality you want in a lightweight aggregate is found in POTTSCO.

Strength — Nailable
Workability — Sawable
Insulation — Non-absorbent

It has tested insulation and acoustical value, uniformity at all temperatures and no segregation in mixing.

POTTSCO Light-Weight Aggregate

USES

Floorfill — Fireproofing
Roof Slabs — Back-up Block
Nailing Concrete — Partition Tile
etc.

POTTSCO fulfills every requirement as shown by laboratory tests and actual field work.

Write for descriptive literature, data and delivered prices

The POTTSCO Corporation
1 North LaSalle Street
CHICAGO

POTTSCO
Shows High Efficiency AT LOW COST

POTTSCO *is*	—Light in weight—70 to 100 pounds per cubic foot, depending on the mix.
High Compressive Strength	—From 500 to 3000 pounds per square inch, depending on the mix.
Exceptional Insulating Value	—A standard POTTSCO block shows a heat loss of only 30 B T U per degree temperature difference per hour.
Acoustical Value	—The Riverbank Laboratory gives POTTSCO a high acoustical rating.
Low Cost	—In addition to its low first cost, POTTSCO shows a substantial labor saving due to its easy workability.

POTTSCO is equally good for monolithic work—roof slabs, nailing concrete, floor and roof fill—or for precast masonry units—back-up block and partition tile. It complies with state and local building codes.

POTTSCO Light-Weight Aggregate

POTTSCO was used throughout for light weight concrete floor fill on the large new Post Office building at Cincinnati.

New Post Office Building at Cincinnati

Builders—Consolidated Engineering Company
Concrete Contractor—J. E. Smith Company

Write for descriptive literature, data and delivered prices

The Pottsco Corporation
1 North LaSalle Street — Chicago

POTTSCO
Used in the New
Chicago Post Office
for floor fill

Graham, Anderson, Probst & White, Architects
John Griffith & Son Co., General Contractors

POTTSCO used in the largest post office in the country! POTTSCO has exceptional light-weight, compressive strength, great insulating and acoustical value. High in insulation and low in cost! Good for back-up block and partition tile as well as for monolithic work.

POTTSCO Light-Weight Aggregate

Floorfill
Roof Slabs
Nailing Concrete
Fireproofing
Load-bearing Building Units
Partition Tile
Roofing Tile

Shipments from either Chicago or Pittsburgh at low freight rates in quantities from carload up.

Write today for sample and engineering data. Exclusive territory available to block plant manufacturers

The Pottsco Corporation
One North La Salle Street — Chicago

Your Neighborhood Conce

Owner Management, Personal Contact, Prompt Courteous Service—Low O

—SOUTH SIDE AND SOUTHWEST SI

BUILDING BLOCK PUT ON MARKET UNUSUAL PRODUCT

All Qualities of Wood Obtained in Substantial Substance.

A Building block, made by a special process to remove approximately 50 per cent of its weight but having sufficient hardness to produce adequate compression strength and comparatively low absorption qualities, is being made and has been placed on the market by the Kalamazoo Cement Products Company located on Alcott and Portage streets. The new product is known as Pottsco.

In special tests the blocks have been found suitable for nailing, sawing, and boring. Its tenacity quality for retaining nails have proved by tests to be superior to that of wood. In this test 80 nails were driven into a 2x4 pine timber and required an averege pull of 140 pounds for extraction, whereas the same number of nails driven into the Pottsco blocks required an average pull of 145 pounds, according to Lester R. Ryan, manager of the company.

Mr. Ryan also says that these block units may be easily and quickly sawed on any angle with any type of saw with no disastrous results to the saw; and that holes may be bored with ordinary tools and even lag screws applied with no ill effect to the brick.

The fire resisting qualities of the product is high, as has been determined by the Robert W. Hunt, Engineers, whose reports, after a test made, states that "the area in immediate contact with the flame came to a bright chrry red which is generally considered indictative of a temperature of about 1,500 degrees Fahrenheit. The other face of the block was then not too hot to be touched by the hand. While under these conditions the blocks were deluged with cold water. No cracking or scaling off of the blocks was apparent from the heat or from the cooling of the water."

The sound-deadening qualities of the product, determined by a test made by the Riverbank Laboratories of Geneva, Illinois, reveals an average reduction over the entire range of tones of 45.7 units, while a reduction of only 60 sensation units would be necessary to reduce a sound of ordinary conversational loudness to inaudibility.

In a freezing and thawing tests made by the University of Wisconsin from January, 1929 to March 26, 1929 showed that though there was some surface deterioration to a depth of only 1-16 of an inch or loss, this did not show up until about 90 reversals had been made.

Other tests made reveal the average compression strength of the units to approximate between 900 and 1,200 pounds per square inch.

Though the product is new to Kalamazoo it has been manufactured by plants in Wisconsin for some time. Slag is used in its manufacture and a chemical analysis shows the block to contain lime, silica, alumina, manganese, and sulphur.

All lead compounds are poisonous.

BAIT MAN UNABLE TO MEET DEMANDS FOR HIS PRODUCT

DeBruin's Business Six Years Old; Has Special Game Fish Permit.

So great has been the demand for live bait by fishermen this spring that Jake DeBruin, bait dealer at 1501 South Westnedge street, is finding it difficult to keep up with the demand in spite of the fact that he leases two ponds for live bait and covers a radius of 40 miles for bait. He is at present considering getting gold fish to keep up with this demand.

Mr. DeBruin has one of the mo modern live bait establishments Michigan. On his property Westnedge street he has structed a roofed-in minnow the base of which is bel water level of Axtell cree runs through the prope creek furnishes a consta tion of water through tanks.

ALL SIZ

The minnows are types and run fr down in size. M leased two County to ke mand for shi forced to re to set h Mr. D rted rd st enoug ends No th

nets as each net pulls to three hundred min

BARS ST. JOE

Further evidence o manship is the sign placed in his minnow reads: "Notice: No to Residents of St This county does ing with minnow DeBruin recogni that county, in well acquainted them bait.

All types of by him incl crickets, an though pat sively used fishermen Mr. DeB evidence lures u the n large

From

The Kalamazoo Gazette
Monday, July 8, 1929.

HADLEY F. FREEMAN
DONALD H. SWEET
GEORGE M. ALBRECHT
HARRY S. WEIDMAN

MARO L. JAHR
MARSHALL LOW

FREEMAN AND SWEET
PATENT ATTORNEYS
TEN SOUTH LASALLE STREET
STATE 6970
CHICAGO, ILLINOIS

RESIDENT—
DONALD H. SWEET
MARO L. JAHR

CLEVELAND—
FREEMAN AND WEIDMAN

MILWAUKEE—
FREEMAN AND ALBRECHT

August 7, 1931.

Harry H. Potts, Esquire,
201 North Wells Street,
Chicago, Illinois.

Dear Mr. Potts:

It is a pleasure to notify you of the formal sealing and issuing of United States Patent 1,816,988 on August 4, 1931, based on your development of light-weight concrete employing a granulated slag aggregate.

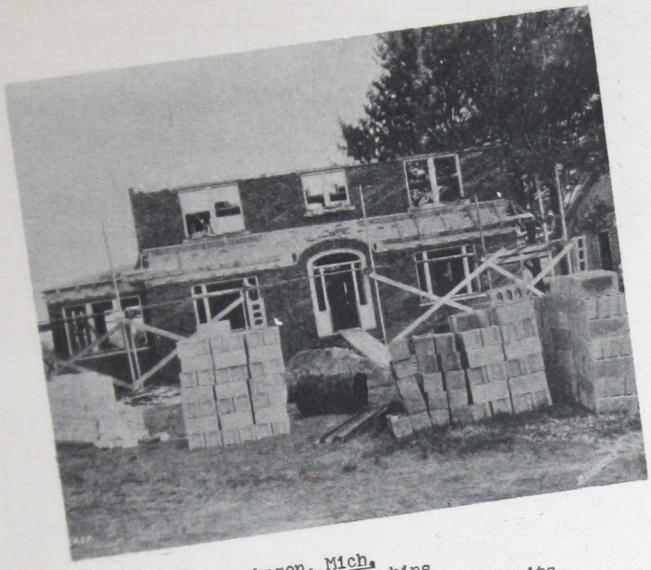
At the outset, when we first approached the Patent Office, we took the position that you were the originator of the first practical light-weight concrete made from any granulated slag aggregate. It is a pleasure now to look back and see that all the evidence considered throughout the proceedings, sustained our position and that the Patent Office has now agreed with us in that conclusion.

Thus it would appear that you can look forward to seventeen years of monopoly and protection with respect to light-weight concrete using an aggregate wholly or chiefly made up of a suitable form of granulated slag, based on a patent that should be as comprehensive and effective as the courts have held the Straub patent to be with respect to cinder block.

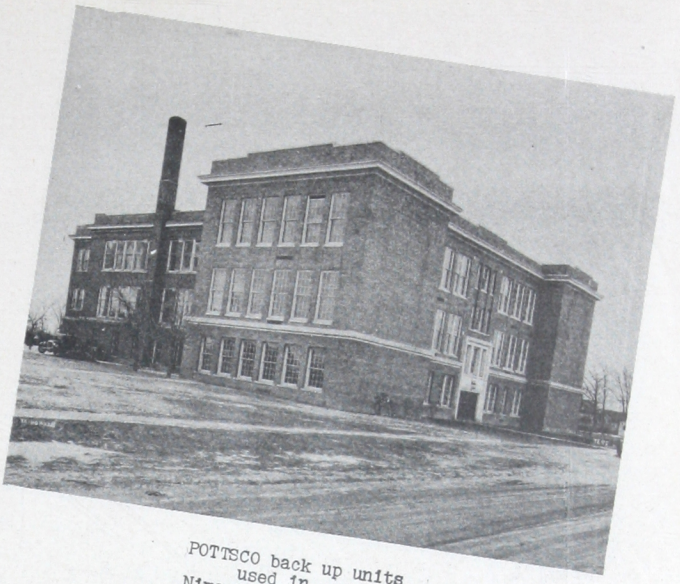
Yours very truly,

Donald H. Sweet

DHS:FH



Muskegon, Mich.
Residence of H. Berghins
POTTSCO back-up and partition units

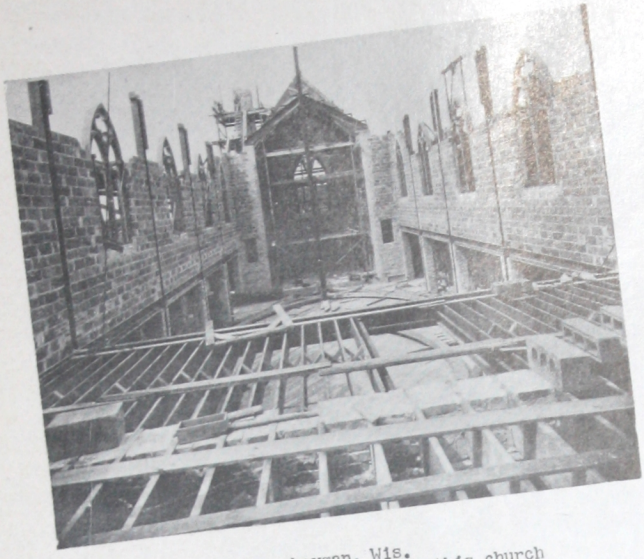


POTTSCO back up units
used in
Nims School,
Muskegon Heights, Mich.

Chicago, Illinois
New U. S. Post Office
POTTSCO floor-fill used throughout

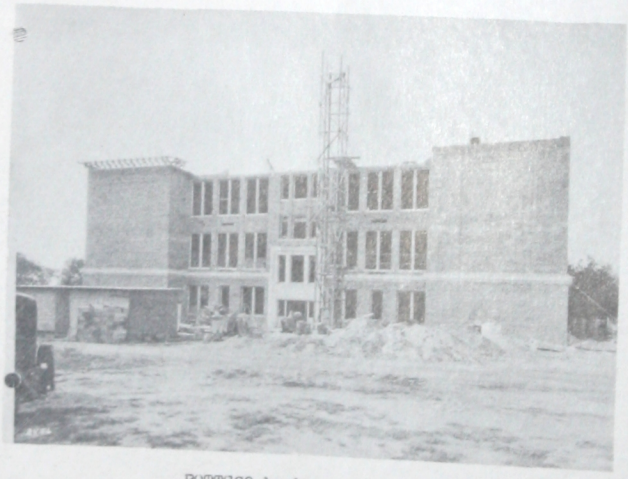
Milwaukee, Wis.
Apartment building using POTTSCO
back-up and partition units—

Milwaukee, Wis.
Foundry - POTTSCO light-weight brick used
for all walls.



Sheboygan, Wis.
POTTSCO back-up units in this church

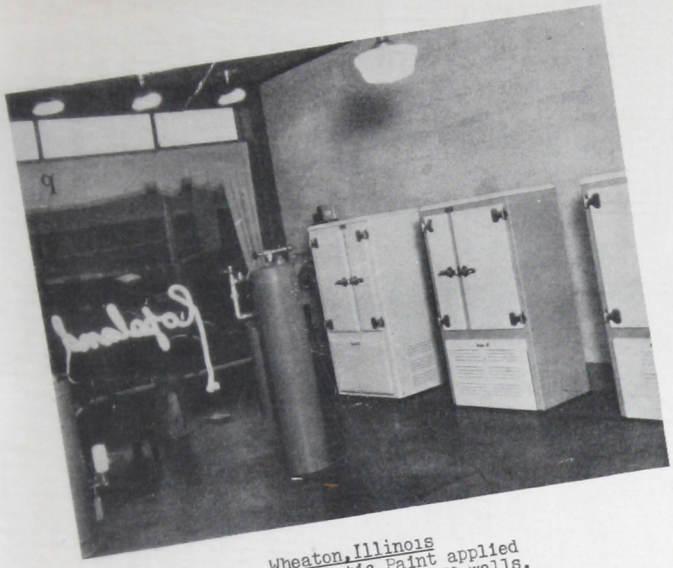
Davenport, Iowa
Apply Portland Cement
Stucco to POTTSCO back-up
units - residence J. H. Kottman



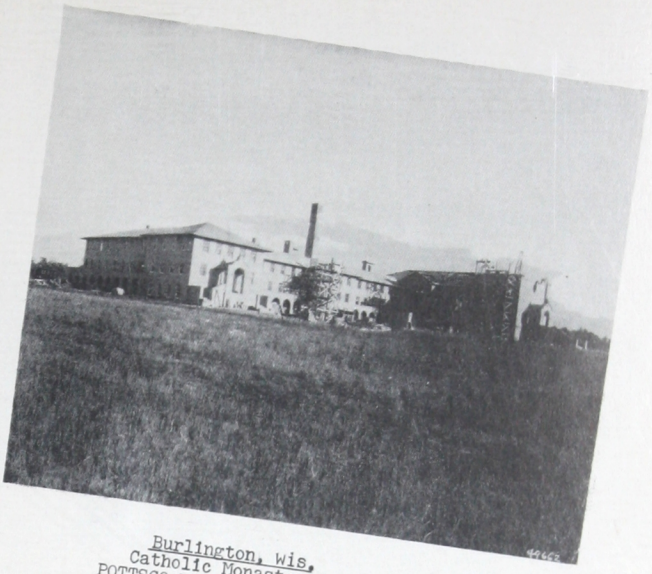
POTTSCO back-up units
used in
North Muskegon, Mich. School.

Milwaukee, Wis.
Permanesoue type of residence
using POTTSCO back-up and
partition units—

Milwaukee, Wis.
Residence using POTTSCO back-up
and partition units

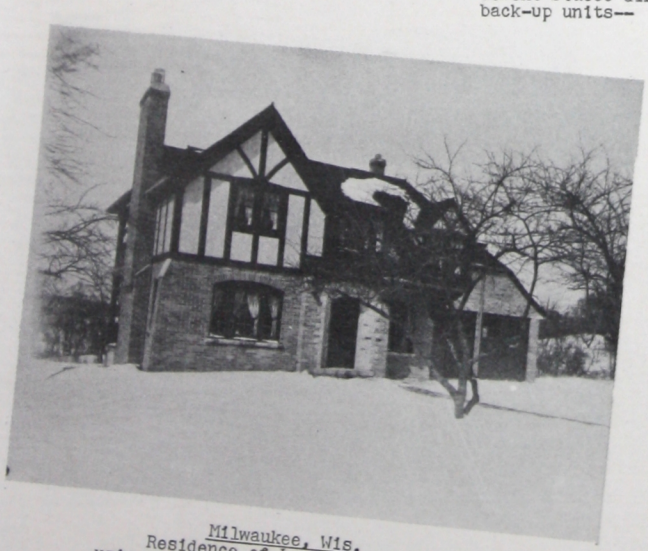


Wheaton, Illinois
Colored Plastic Paint applied
direct to POTTSCO walls.



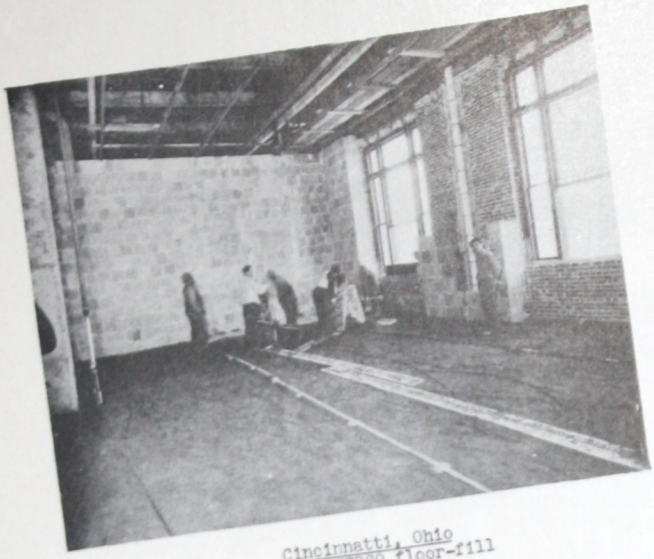
Burlington, Wis.
Catholic Monastery
POTTSCO back-up and partition units.

Duplex Residence of B. H. Schoonhoven
ready for application Portland
Cement Stucco direct on POTTSCO
back-up units--



Milwaukee, Wis.
Residence of L. E. Schwalbe
using POTTSCO back-up and partition units

Muskegon, Michigan
Nurse's Home - POTTSCO



Cincinnati, Ohio
Placing POTTSCO floor-fill
in new U. S. Post Office

POTTSCO back up units
used in
Michigan County School
North Muskegon, Mich.

Cincinnati, Ohio
New U. S. Post Office -
POTTSCO floor fill used throughout

Milwaukee, Wisconsin
A typical apartment building
in which POTTSCO back-up and
partition units are used—

Milwaukee, Wis.
Commercial and apartment building
using POTTSCO back-up and partition
units—

Milwaukee, Wisconsin.
Apartment building in which POTTSCO back units was used

Kalamazoo, Mich.
De Haan apartment buildings using POTTSCO back-up units

Milwaukee, Wisconsin
Showing how POTTSCO walls may be cut to place, conduits, electrical boxes, pipes, etc-

Milwaukee, Wis.
A typical residence construction using POTTSCO building units—

Milwaukee, Wis.
A modern service station - POTTSCO back-up units with Portland Cement, Stucco

Wauwatosa, Wis.
Underwood Hotel - POTTSCO back-up and partition units

Milwaukee, Wis.
Heiden & Lange Funeral Home
POTTSCO back-up and partition units used

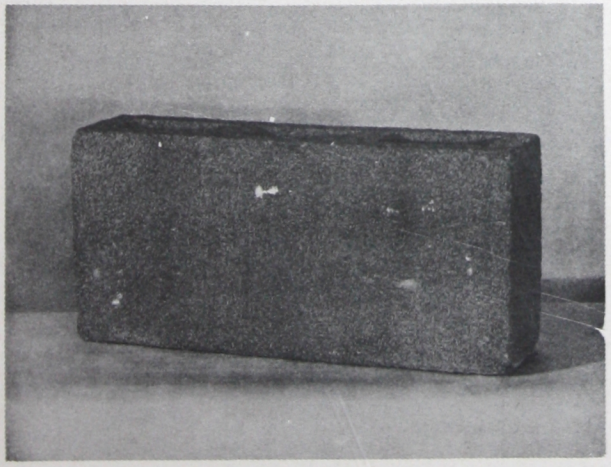
Davenport, Iowa.
POTTSCO back-up and partition units used throughout this modern service station—

Milwaukee, Wis.
Residence construction using POTTSCO back-up units—

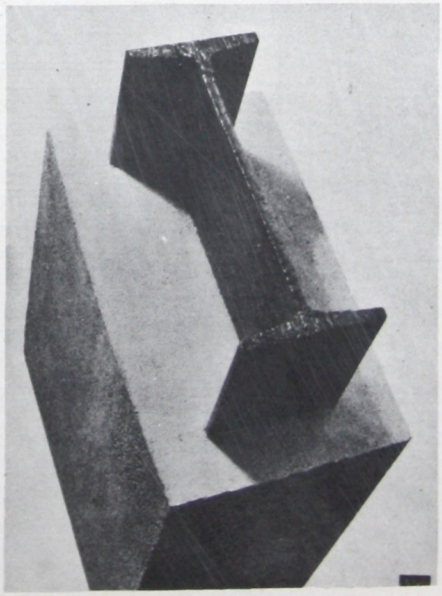
Davenport, Iowa.
Residence of J. H. Kottman
Interior walls ready for direct plaster on POTTSCO building units—

A magnified granule of
POTTSCO light-weight
Aggregate

Milwaukee, Wis.
Asphalt composition siding nailed directly
to POTTSCO back-up blocks--



A typical standard
4" x 8" x 16" POTTSCO building
unit--



Specimen section showing POTTSCO
light-weight concrete for fire-proofing
steel columns, saving dead weight
and increasing fire protection--